APPENDIX J SUMMARY OF RISK ASSESSMENT RESULTS

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TABLE J-1 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Current
Medium: Soils
Exposure Medlum: Surface Soil/Sludge
Exposure Point: Lagoons (1 through 5) and Warehouse Area
Receptor Population: Trespasser
Receptor Age: Adolescent (ages 9-18)

Intake Equation/ Model Name	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15 Chronic Daily Intake (CDI) (mg/kg-day) = USEPA, 1997 Prof. Judgement Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989	CD! (mg/kg-day) = CS x SA x AF x EF x ED x DAF x CF BW x AT
CT Rationale/ Reference	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15 USEPA, 1997 Prof. Judgement Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989	see Tables 3.1, 3.3. 3.5, 3.7, 3.9 and 3.15 CDI (mg/kg-day) = USEPA, 2000 CS x SA x AE USEPA, 2000 Brof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989
CT Value	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15 1	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15 and 4,700 0.23 30 5 chemical specific 45 25,550 1,825 0.000001
RME Rationale/ Reference	see Tables 3.1, 3.3, see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15 3.5, 3.7, 3.9 and 3.15 100 USEPA, 1997 10 USEPA, 1997 45 USEPA, 1987 25,550 USEPA, 1989 3.650 USEPA, 1989	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15 USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989
RME Value	see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15 100 100 100 45 25,550 3,650 0.000001	see Tables 3.1, 3.3, see Tables 3.1, 3.3, 3.5, 3.7, 3.9 and 3.15, 3.5, 3.7, 3.9 and 3.15, 4,700 0.23 USEPA, 2000 0.23 USEPA, 2000 0.08EPA, 1997 25,550 USEPA, 1989 3,650 USEPA, 1989 0.0000001
Units	mg/kg mg/day unitless days/year years kg days days	mg/kg cm² cm² days/year years
Parameter Definition	Chemical Concentration in Soil Ingestion Rate Fraction Ingested Exposure Frequency Exposure Duration Body Weight Averaging Time (Cancer) Conversion Factor	Chemical Concentration in Soil Skin Surface Area Available for Contact Skin Adherence Factor Exposure Frequency Exposure Duration Dermal Absorption Factor Body Weight Averaging Time (Cancer) Conversion Factor
Parameter Code	SS R R R B B W ATA C A A A C A C A C A C A C A C A C A	SS SA SA DAF ED DAF AT.C
Exposure Route	Ingestion	регша

TABLE J-2 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Lagoons (1 through 5)
Receptor Population: Trespasser
Receptor Adolescent (ages 9-18)

Exposure Route Parameter	Parameter	Parameter Definition	Units	RME	RME	៦	CT	Intake Equation/
	Code			Value	Rationale/ Reference	Value	Rationale/ Reference	Model Name
				see Tables 3.11 to	see Tables 3.11 to see Tables 3.11 to	see Tables 3.11 to	see Tables 3.11 to	
Dermal	Š	Chemical Concentration in Water	Hg/L	3.14	3.14		3.14	Organics:
	D	Dose Absorbed per Unit Area per Event	mg/cm²-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm²	4,700	USEPA, 2000	4,700	USEPA, 2000	
	<u>გ</u>	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	DAXSAXEVXEFXED
	Ш	Event Time	hrs/event	_	Prof. Judgement	0.5	Prof. Judgement	BW×AT
	2	Event Frequency	events/day	-	Prof. Judgement	-	Prof. Judgement	
	Ш	Exposure Frequency	days/year	36	Prof. Judgement	24	Prof. Judgement	Inorganics:
		Exposure Duration	years	10	USEPA, 1997	ໝ	USEPA, 1997	CDI (mg/kg-day) ≈
	BW	Body Weight	ķ	45	USEPA, 1997	45	USEPA, 1997	
-	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
	AT-N	AT-N Averaging Time (Non-Cancer)	days	3,650	USEPA, 1989	1,825	USEPA, 1989	BW×AT
	R	Conversion Factor 1	∪cm³	0,001	;	0.001	;	
	CF2	Conversion Factor 2	bπ/bm	0.001	•	0.001		

TABLE J-3 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil/Sludge
Exposure Point: Lagoons (1 through 5) and Warehouse Area
Receptor Population: Park Visitor
Receptor Age: Adult

Intake Equation/ Model Name	Chronic Dally Intake (CDI) (mg/kg-day) = CS × IR × FI × EF × ED × CF BW × AT	CDi (mg/kg-day) = CS x SA x AF x EF x ED x DAF x CF BW x AT
CT Rationale/ Reference	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 USEPA, 1997 Prof. Judgement Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989
CT Value	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 50 7 7 70 25,550 2,555 0.000001	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 5,700 0.07 56 7 7 00 25,550 2,555
RME Rationale/ Reference	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 USEPA, 1997 Prof. Judgement Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989
RME Value	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 100 112 24 70 25,550 8,760	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 5,700 0.07 112 24 chemical specific 70 25,550 8,760
Units	mg/kg mg/day unitless days/year years kg days days	mg/kg cm² mg/cm²-day days/year years kg days days kg/mg
Parameter Definition	Chemical Concentration in Soil Ingestion Rate Fraction Ingested Exposure Frequency Exposure Duration Body Weight Averaging Time (Cancer) Conversion Factor	Chemical Concentration in Soil Skin Surface Area Available for Contact Skin Adherence Factor Exposure Frequency Exposure Duration Dermal Absorption Factor Body Weight Averaging Time (Cancer) Conversion Factor
Parameter Code	CS FI EF AT-C AT-C CF	CS SA AF ED DAF BW AT-C CF
Exposure Route	Ingestion	Dermal

TABLE J-4 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Lagoons (1 through 5)
Receptor Population: Park Visitor
Receptor Age: Adult

- 0			_	_			_	_	_			_	=	==			
	Intake Equation/	Model Name			Organics:	Chronic Daily Intake (CDI) (mg/kg-day) =		DAXSAXEVXEFXED	BW×AT		Inorganics:	CDI (mg/kg-day) =		CW x SA x PC x ET x EV x EF x ED x CF1 x CF2	BW×AT		
	ъ	Rationale/	Reference	see Tables 3,11 to	3.14	USEPA, 1999a	USEPA, 2000	USEPA, 2000	Prof. Judgement	Prof. Judgement	Prof. Judgement	USEPA, 1997	USEPA, 1997	USEPA, 1989	USEPA, 1989	:	;
	CT	Value		see Tables 3.11 to	3,14	see Attachment 4	5,700	chemical specific	0.5	τ-	30	7	20	25,550	2,555	0.001	0.001
	RME	Rationale/	Keference	see Tables 3.11 to see Tables 3.11 to	3,14	USEPA, 1999a	USEPA, 2000	USEPA, 2000	Prof. Judgement	Prof. Judgement	Prof. Judgement	USEPA, 1997	USEPA, 1997	USEPA, 1989	USEPA, 1989	;	•
	RME	Value		see Tables 3.11 to	3.14	see Attachment 4	5,700	chemical specific	τ-	+	09	24	20	25,550	8,760	0.001	0.001
	Units				√g/L	mg/cm²-event	cm ²	cm/hr	hrs/event	events/day	days/year	years	ķ	days	days	L/cm³	6π/βш
	Parameter Definition				Chemical Concentration in Water	Dose Absorbed per Unit Area per Event	Skin Surface Area Available for Contact	Permeability Constant	Event Time	Event Frequency	Exposure Frequency	Exposure Duration	Body Weight	Averaging Time (Cancer)	AT-N Averaging Time (Non-Cancer)	Conversion Factor 1	CF2 Conversion Factor 2
	Parameter	Code			ŏ ŏ	DA D	S, AS	<u>я</u>	Б	<u>⊒</u>	出	8	BW	AT-C	AT-N	OF.	CF2 (
	Exposure Route Parameter	-			Dermal				-								

TABLE J-5 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soll/Sludge
Exposure Point: Lagoons (1 through 5) and Warehouse Area
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)

Intake Equation/ // Model Name	2, 3.4, l and Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR x FI x EF x ED x CF BW x AT Both	769 689	2, 3.4, l and CDI (mg/kg-day) ≈ CS × SA × AF × EF × ED × DAF × CF. NO0 BW × AT Nent 197 189 189
CT Rationale/ Reference	see Tables 3.2, 3.4, 3.6, 3.6, 3.10 and 3.16 USEPA, 1997 Prof. Judgement Prof. Judgement	USEPA, 1989 USEPA, 1989 USEPA, 1989	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989
CT Value	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 100	15 25,550 730 0.000001	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 2.900 0.3 56 2 56 chemical specific 15 25,550 730 0.000001
RME Rationale/ Reference	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 USEPA, 1997 Prof. Judgement	USEPA, 1987 USEPA, 1989 USEPA, 1989	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989
RME Value	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 200 1	15 25,550 2,190 0.000001	see Tables 3.2, 3.4, 3.6, 3.8, 3.10 and 3.16 and 2.900 0.3 112 6 6 chemical specific 15 25,550 2.190 0.0000001
Units	mg/kg mg/day unitless days/year	kg days days kg/mg	mg/kg cm² mg/cm²-day days/year years - • • • • • • • • • • • • • • • • • • •
Parameter Definition	Chemical Concentration in Soil Ingestion Rate Fraction Ingested Exposure Frequency	Exposure Curation Body Weight Averaging Time (Cancer) Averaging Time (Non-Cancer) Conversion Factor	Chemical Concentration in Soil Skin Surface Area Available for Contact Skin Adherence Factor Exposure Frequency Exposure Duration Dermal Absorption Factor Body Weight Averaging Time (Cancer) Conversion Factor
Parameter Code		BW AT-C AT-N CF	CS SA SA EF EF DAF BW AT-C CF
Exposure Route	Ingestion		Dermal

TABLE J-6 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Lagoons (1 through 5)
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)

Exposure Route Parameter	Parameter	Parameter Definition	Units	RME	RME	CT	CT	Intake Equation/
	Code			Value	Rationale/	Value	Rationale/	Model Name
					Reference		Reference	
				see Tables 3.11 to	see Tables 3.11 to see Tables 3.11 to	see Tables 3.11 to	see Tables 3.11 to	
Dermal	Š	Chemical Concentration in Water	πg/L	3.14	3.14	3.14	3.14	Organics:
	Δ	Dose Absorbed per Unit Area per Event	mg/cm²-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm ²	2,900	USEPA, 2000	2,900	USEPA, 2000	
-	<u>В</u>	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	DAXSAXEVXEFXED
	<u>Б</u>	Event Time	hrs/event	۲-	Prof. Judgement	0.5	Prof. Judgement	BW×AT
	∑	Event Frequency	events/day	-	Prof. Judgement	-	Prof. Judgement	
	出	Exposure Frequency	days/year	09	Prof. Judgement	30	Prof. Judgement	Inorganics:
	8	Exposure Duration	years	9	USEPA, 1997	7	USEPA, 1997	CDI (mg/kg-day) ≈
	BW	Body Weight	ķ	15	USEPA, 1997	15	USEPA, 1997	- 77
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
	AT-N	AT-N Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	BW×AT
	F.	Conversion Factor 1	L/cm³	0.001	;	0.001	:	
	CF2	Conversion Factor 2	bπ/bш	0.001	•	0.001	;	

TABLE J-7 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Future Medium: Soils Eugano Madium: Callifet, des
Medium: Soils Evone Madium: Soilifelidas
Eventual Madium: Collins
Exposure Mediani. Soil Single
Exposure Point: Lagoons (1 through 5)
Receptor Population: Commercial Worker
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	S	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	Chronic Daily Intake (CDI) (mg/kg-day) =			
	ㄸ	Ingestion Rate	mg/day	100	USEPA, 1997	50	USEPA, 1997	CS x IR x FI x EF x ED x CF
	ū.	Fraction Ingested	unitless	ν-	Prof. Judgement	-	Prof. Judgement	BW×AT
	Ш	Exposure Frequency	days/year	250	USEPA, 2000	219	USEPA, 2000	-
		Exposure Duration	years	25	USEPA, 2000	თ	USEPA, 2000	
	BW	Body Weight	Ą	20	USEPA, 1997	70	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	A-T-N	Averaging Time (Non-Cancer)	days	9,125	USEPA, 1989	3,285	USEPA, 1989	
	<u>ც</u>	Conversion Factor	kg/mg	0.00001	;	0.00001	;	
Dermal	SS	Chemical Concentration in Soil	mg/kg	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	CDI (mg/kg-dav) =
	SA	Skin Surface Area Available for Contact	cm²	3,300	USEPA, 2000	3,300	USEPA, 2000	CS × SA × AF × EF × ED × DAF × CF
	AF	Skin Adherence Factor	mg/cm²-day	0.07	USEPA, 2000	0.07	USEPA, 2000	BW×AT
	出	Exposure Frequency	days/year	250	USEPA, 2000	219	USEPA, 2000	
		Exposure Duration	years	25	USEPA, 2000	Ø	USEPA, 2000	
	DAF	Dermal Absorption Factor		chemical specific	:	chemical specific	,	
-	BW	Body Weight	Ŋ	02	USEPA, 1997	02	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	9,125	USEPA, 1989	3,285	USEPA, 1989	
	ხ	Conversion Factor	kg/mg	0.000001	;	0.000001	:	

TABLE J-8 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Solls
Exposure Medium: Soil/Siudge
Exposure Point: Lagoons (1 through 5)
Receptor Population: Utility Worker
Receptor Age: Adult

Intake Equation/ Model Name	Chronic Daily Intake (CDI) (mg/kg-day) =	CS x IR x FI x EF x ED x CF	BW×AT								CDI (mg/kg-day) =	CS×SA×AF×EF×ED×DAF×CF	BW×AT							
CT Rationale/ Reference	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	USEPA, 1996	Prof. Judgement	Prof. Judgement	Prof. Judgement	USEPA, 1997	USEPA, 1989	USEPA, 1989		see Tables 3.2, 3.4,	3.6, 3.8, and 3.10	USEPA, 2000	USEPA, 2000	Prof. Judgement	Prof. Judgement	;	USEPA, 1997	USEPA, 1989	USEPA, 1989	•
CT Value	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	200	τ-	22	₹-	02	25,550	365	0.000001	see Tables 3.2, 3.4,	3.6, 3.8, and 3.10	3,300	0.2	22	τ-	chemical specific	02	25,550	365	0.000001
RME Rationale/ Reference	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	USEPA, 1996	Prof. Judgement	Prof. Judgement	Prof. Judgement	USEPA, 1997	USEPA, 1989	USEPA, 1989	÷	see Tables 3.2, 3.4,	3.6, 3.8, and 3.10	USEPA, 2000	USEPA, 2000	Prof. Judgement	Prof. Judgement	:	USEPA, 1997	USEPA, 1989	USEPA, 1989	;
RME Value	see Tables 3.2, 3.4, 3.6, 3.8, and 3.10	200	Υ-	99	-	70	25,550	365	0.00001	see Tables 3.2, 3.4,	3.6, 3.8, and 3.10	3,300	0.2	99	-	chemical specific	02	25,550	365	0.000001
Units	mg/kg	mg/day	unitless	days/year	years	,	days	days	kg/mg		mg/kg	cm²	mg/cm²-day	days/year	years	;	Ą	days	days	kg/mg
Parameter Definition	Chemical Concentration in Soil	Ingestion Rate	Fraction Ingested	Exposure Frequency	Exposure Duration	Body Weight	Averaging Time (Cancer)	Averaging Time (Non-Cancer)	Conversion Factor		Chemical Concentration in Soil	Skin Surface Area Available for Contact	Skin Adherence Factor	Exposure Frequency	Exposure Duration	Dermal Absorption Factor	Body Weight	Averaging Time (Cancer)	Averaging Time (Non-Cancer)	Conversion Factor
Parameter Code	SS	<u>=</u>	Œ	<u>н</u>	0	BW	AT-C	AT-N	Q O		s S	SA VS	AF	坦	9	DAF	BW	AT-C /	AT-N	<u>ც</u>
Exposure Route	Ingestion						-				Dermal									

TABLE J-9 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Future
Medium: Soil/Groundwater
Exposure Medium: Air
Exposure Point: Lagoons (1 through 5)
Receptor Population: Utility Worker
Receptor Age: Adult

Exposure Route Parameter	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
inhalation	క	Modeled Concentration in Air	μg/m³	see Table 3.50	see Table 3.50	see Table 3.50	see Table 3.50	
-	ᆸ	Exposure Time	hrs/day	80	Prof. Judgement	æ	Prof. Judgement	Chronic Daily Intake (CDI) ($\mu g/m^3$) =
	m r	Exposure Frequency	days/year	99	Prof. Judgement	22	Prof. Judgement	
	<u></u>	Exposure Duration	years	-	Prof. Judgement	-	Prof. Judgement	CAXETXED
	AT-C	AT-C Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	CF×AT
	AT-N	Averaging Time (Non-Cancer)	days	365	USEPA, 1989	365	USEPA, 1989	
	P.	CF Conversion Factor	hr/day	24	:	24		

TABLE J-10 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Future
 Medium: Surface Water
 Exposure Medium: Surface Water
 Exposure Point: Lagoons (1 through 5)
 Receptor Population: Utility Worker
 Receptor Age: Adult

Exposure Route Parameter	Parameter	Parameter Definition	Units	RME	RME	ե	С С	Intake Equation/
	Code			Value	Rationale/	Value	Rationale/	Model Name
					Reference		Reference	
				see Tables 3.11 to	see Tables 3.11 to see Tables 3.11 to	see Tables 3.11 to	see Tables 3.11 to	
Dermal	Š	Chemical Concentration in Water	μg/t.	3.14	3.14	3.14	3,14	Organics:
	PA DA	Dose Absorbed per Unit Area per Event	mg/cm²-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) ≈
-	S,	Skin Surface Area Available for Contact	cm ²	3,300	USEPA, 2000	3,300	USEPA, 2000	
	ပ္	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	DAXSAXEVXEFXED
	Б	Event Time	hrs/event	-	Prof. Judgement	0.5	Prof. Judgement	BW×AT
	Ē	Event Frequency	events/day	-	Prof. Judgement	-	Prof. Judgement	
	핆	Exposure Frequency	days/year	99	Prof. Judgement	22	Prof. Judgement	Inorganics:
	8	Exposure Duration	years	+	Prof. Judgement	<u> </u>	Prof. Judgement	CDI (mg/kg-day) ≂
•	BW	Body Weight	κ	. 02	USEPA, 1997	0,	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
	AT-N	Averaging Time (Non-Cancer)	days	365	USEPA, 1989	365	USEPA, 1989	BW×AT
	윤	Conversion Factor 1	L/cm³	0.001	:	0.001	;	
	CF2	CF2 Conversion Factor 2	6π/6ш	0.001	-	0.001		

TABLE J-11 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil
Exposure Point: Warehouse Area
Receptor Population: On-Site Resident
Receptor Age: Adult

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	CS EF ED BW AT-C AT-C	Chemical Concentration in Soil Ingestion Rate Fraction Ingested Exposure Frequency Exposure Duration Body Weight Averaging Time (Cancer) Averaging Time (Non-Cancer) Conversion Factor	mg/kg mg/day unitless days/year years kg days days	see Table 3.16 100 1 150 24 70 25,550 8,760 0.0000001	see Table 3.16 USEPA, 1997 Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989	see Table 3.16 50 1 1 150 7 7 7 25,550 2,555	see Table 3.16 USEPA, 1997 Prof. Judgement USEPA, 1994c USEPA, 1997 USEPA, 1989 USEPA, 1989	Chronic Daily Intake (CDI) (mg/kg-day) = CS × IR × FI × EF × ED × CF BW × AT
Dermai	CS SA AF ED DAF BW AT-C AT-N	Chemical Concentration in Soil Skin Surface Area Available for Contact Skin Adherence Factor Exposure Frequency Exposure Duration Dermal Absorption Factor Body Weight Averaging Time (Cancer) Averaging Time (Non-Cancer)	mg/kg cm² mg/cm²-day days/year years kg days days	see Table 3.16 5,700 0.07 150 24 chemical specific 70 25,550 8,760 0.0000001	see Table 3.16 USEPA, 2000 USEPA, 1994c USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989	see Table 3.16 5,700 0.07 150 7 chemical specific 70 25,550 2,555	see Table 3.16 USEPA, 2000 USEPA, 1994c USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989	CDI (mg/kg-day) = CS x SA x AF x EF x ED x DAF x CF BW x AT

TABLE J-12 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Soils
Exposure Medium: Soil
Exposure Point: Warehouse Area
Receptor Population: On-Site Resident
Receptor Age: Young Child (ages 1-6)

Exposure Route	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/	CT Value	CT Rationale/	Intake Equation/ Model Name
					Kererce		Kererence	
Ingestion	S	Chemical Concentration in Soil	mg/kg	see Table 3.16	see Table 3.16	see Table 3.16	see Table 3.16	Chronic Daily Intake (CDI) (mg/kg-day) =
	Œ	Ingestion Rate	· mg/day	200	USEPA, 1997	100	USEPA, 1997	CS x IR x FI x EF x ED x CF
	<u>u.</u>	Fraction Ingested	unitless	-	Prof. Judgement	-	Prof. Judgement	BW×AT
	Ħ	Exposure Frequency	days/year	150	USEPA, 1994c	150	USEPA, 1994c	
	<u> </u>	Exposure Duration	years	ဖ	USEPA, 1994c	8	USEPA, 1994c	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
<u> </u>	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	Ŗ	Conversion Factor	kg/mg	0.000001		0.000001	•	
Dermal	SS	Chemical Concentration in Soil	mg/kg	see Table 3.16	see Table 3.16	see Table 3.16	see Table 3.16	CDI (mg/kg-day) =
	SA	Skin Surface Area Available for Contact	cm ²	2,900	USEPA, 2000	2,900	USEPA, 2000	CS x SA x AF x EF x ED x DAF x CF
	ΑF	Skin Adherence Factor	mg/cm²-day	0.3	USEPA, 2000	0.3	USEPA, 2000	BW×AT
	Ш	Exposure Frequency	days/year	150	USEPA, 1994c	150	USEPA, 1994c	
		Exposure Duration	years	ø	USEPA, 1994c	7	USEPA, 1994c	
	DAF	Dermal Absorption Factor	:	chemical specific	:	chemical specific	;	
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	A-TA	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	P.	Conversion Factor	kg/mg	0.000001	:	0.000001	:	

TABLE J-13 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Current
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Hoosic River
Receptor Population: Recreational Visitor
Receptor Age: Adolescent (age 9-18)

		
Intake Equation/ Model Name	Chronic Daily Intake (CDI) (mg/kg-day) = CW × IR × ET × EF × ED × CF1 × CF2 BW × AT BW × AT	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = DA x SA x EV x EF x ED BW x AT Inorganics: CDI (mg/kg-day) = CW x SA x PC x ET x EV x EF x ED x CF1 x CF2 BW x AT
CT Rationale/ Reference	see Tables 3.17 USEPA, 1989 Prof. Judgement Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989	see Tables 3.17 USEPA, 1999a USEPA, 2000 USEPA, 2000 Prof. Judgement Prof. Judgement Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989
CT Value	see Tables 3.17 50 0.5 24 5 45 25,550 1,825 0.001	see Tables 3.17 see Attachment 4 4,700 chemical specific 0.5 1 24 5 45 25,550 1,825 0.001
RME Rationale/ Reference	see Tables 3.17 USEPA, 1989 Prof. Judgement Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989	see Tables 3.17 USEPA, 1999a USEPA, 2000 USEPA, 2000 Prof. Judgement Prof. Judgement Prof. Judgement OSEPA, 1997 USEPA, 1989 USEPA, 1989
RME Value	see Tables 3.17 50 2.5 36 10 45 25,550 3,650 0.001	see Tables 3.17 see Attachment 4 4,700 chemical specific 2.5 1 36 10 45 25,550 3,650 0.001
Units	μg/L mL/hr hrs/day days/year years kg days days mg/μg	μg/L mg/cm²-event cm² cm/hr hrs/event even/day days/year years kg days days L/cm³ mg/μg
Parameter Definition	Chemical Concentration in Water Ingestion Rate of Water Exposure Time Exposure Frequency Exposure Duration Body Weight Averaging Time (Cancer) Averaging Time (Non-Cancer) Conversion Factor 1	Chemical Concentration in Water Dose Absorbed per Unit Area per Event Skin Surface Area Available for Contact Permeability Constant Event Time Event Frequency Exposure Frequency Exposure Frequency Exposure Guration Body Weight Averaging Time (Non-Cancer) Conversion Factor 1 Conversion Factor 2
Parameter Code	CW ET EF E E BW E BW CF1 CC72 CC72 CC72 CC72 CC72 CC72 CC72 CC7	CW SA SA SA AT-C CF2
Exposure Route	Ingestion	Dermal

TABLE J-14 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Hoosic River
Receptor Population: Recreational Visitor
Receptor Adolescent (ages 9-18)

		
Intake Equation/ Model Name	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR x FI x EF x ED x CF BW x AT CDI (mg/kg-day) =	BW×AT XEV X DAT X CT
CT Rationale/ Reference	see Table 3.18 USEPA, 1997 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989	USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989
CT Value	see Table 3.18 50 1 24 5 45 25,550 1,825 0.000001 see Table 3.18	4,700 0.23 24 5 chemical specific 45 25,550 1,825 0.000001
RME Rationale/ Reference	see Table 3.18 USEPA, 1997 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989 USEPA, 1989	USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989
RME Value	see Table 3.18 100 1 36 10 45 25,550 3,650 0,0000001 see Table 3.18	4,700 0.23 36 10 chemical specific 45 25,550 3,650 0.000001
Units	mg/kg mg/day unitless days/year years kg days days kg/mg mg/kg	cm mg/cm²-day days/year years kg days days kg/mg
Parameter Definition	Chemical Concentration in Sediment Ingestion Rate of Sediment Fraction Ingested Exposure Frequency Exposure Duration Body Weight Averaging Time (Cancer) Averaging Time (Non-Cancer) Conversion Factor Chemical Concentration in Soil	Skin Surface Area Available for Contact Skin Adherence Factor Exposure Frequency Exposure Duration Dermal Absorption Factor Body Weight Averaging Time (Çancer) Averaging Time (Non-Cancer) Conversion Factor
Parameter Code	!	SA AF DAF BW AT-C CF
Exposure Route	Ingestion	

TABLE J-15 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Hoosic River
Receptor Population: Park Visitor
Receptor Age: Adult

Exposure Route Parameter Code	Parameter Code	r Parameter Definition Unit	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	§ ∝	Chernical Concentration in Water Ingestion Rate of Water	µg/L m∐hr	see Tables 3.17 50	see Tables 3.17 USEPA, 1989	see Tables 3.17 50	see Tables 3.17 USEPA, 1989	Chronic Daily Intake (CDI) (mg/kg-day) =
	Ħ	Exposure Time	hrs/day	2.5	Prof. Judgement	0.5	Prof. Judgement	BW x AT
-	뉴 C	Exposure Frequency	days/year	60	Prof. Judgement	30	Prof. Judgement	
	S MB	Body Weight	kg	20	USEPA, 1997	. 02	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	
	CF.	Conversion Factor 1	6 <i>1</i> /6m	0.001	;	0.001	1	
	CF2	Conversion Factor 2	UmL	0.001	-	0.001	•	
Dermal	Š	Chemical Concentration in Water	µg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Organics:
	DA	Dose Absorbed per Unit Area per Event	mg/cm²-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Daily Intake (CDI) (mg/kg-day) =
	S,	Skin Surface Area Available for Contact	cm²	5,700	USEPA, 2000	5,700	USEPA, 2000	
	<u>م</u>	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	DAXSAXEVXEFXED
	ш	Event Time	hrs/event	2.5	Prof. Judgement	0.5	Prof. Judgement	BW×AT
	≥	Event Frequency	event/day	-	Prof. Judgement	-	Prof. Judgement	
	п	Exposure Frequency	days/year	09	Prof. Judgement	30	Prof. Judgement	Inorganics:
	8	Exposure Duration	years	24	USEPA, 1997	7	USEPA, 1997	CDI (mg/kg-day) =
	8%	Body Weight	kg	20	USEPA, 1997	20	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
	AT-N	Averaging Time (Non-Cancer)	days	8,760	USEPA, 1989	2,555	USEPA, 1989	BW×AT
	F.	Conversion Factor 1	L/cm³	0.001	:	0.001	•	
	CF2	Conversion Factor 2	bπ/βш	0.001	••	0.001	-	

TABLE J-16 VALUES USED FOR DAILY INTAKE CALCULATIONS

. POWNAL TANNERY

Soenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Hoosic River
Receptor Population; Park Visitor
Receptor Age: Adult

Intake Equation/ Model Name	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR x EI x EE x ED x CE BW x AT CDI (mg/kg-day) = CS x SA x AF x EF x ED x DAF x CE BW x AT
CT Rationale/ Reference	see Table 3.18 USEPA, 1997 Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989 USEPA, 1989 USEPA, 2000 USEPA, 2000 USEPA, 2000 USEPA, 1997 USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989
CT Value	see Table 3.18 50 1 30 7 7 70 25,550 2,555 0.000001 see Table 3.18 5,700 0.07 30 7 chemical specific 70 25,550 25,550 25,550
RME Rationale/ Reference	see Table 3.18 USEPA, 1997 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989 USEPA, 2000 USEPA, 2000 USEPA, 2000 USEPA, 2000 USEPA, 2000 USEPA, 1989 USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989
RME Value	see Table 3.18 100 1 60 24 70 25,550 8,760 0.000001 5,700 0.07 60 24 chemical specific 70 25,550 8,760 0.000001
Units	mg/kg mg/day unitless days/year years kg/mg mg/kg cm² mg/kg cm² years years kg days days
Parameter Definition	Chemical Concentration in Sediment ingestion Rate of Sediment Fraction Ingested Exposure Frequency Exposure Duration Body Weight Averaging Time (Cancer) Averaging Time (Non-Cancer) Conversion Factor Chemical Concentration in Soil Skin Surface Area Available for Contact Skin Surface Area Available for Contact Exposure Frequency Exposure Frequency Exposure Factor Body Weight Averaging Time (Cancer) Averaging Time (Cancer)
Parameter Code	CS C
Exposure Route	Ingestion Dermal

TABLE J-17 VALUES USED FOR DAILY INTAKE CALCULATIONS

Scenario Timeframe: Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Hooslo River
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)

Exposure Route P	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Š	Chemical Concentration in Water	Hg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Chronic Daily Intake (CDI) (mg/kg-day) =
	Œ	Ingestion Rate of Water	mL/hr	20	USEPA, 1989	50	USEPA, 1989	CW x IR x ET x EF x ED x CF1 x CF2
	Б	Exposure Time	hrs/day	2.5	Prof. Judgement	0.5	Prof. Judgement	BW×AT
	F	Exposure Frequency	days/year	09	Prof. Judgement	30	Prof. Judgement	
	Ö	Exposure Duration	years	ဖ	USEPA, 1997	8	USEPA, 1997	
	BW	Body Weight	· g	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	
	F	Conversion Factor 1	87/βш	0.001	;	0.001	;	
	CF2	Conversion Factor 2	L/mL	0.001	:	0.001	:	
Dermal	χ	Chemical Concentration in Water	hg/L	see Tables 3.17	see Tables 3.17	see Tables 3.17	see Tables 3.17	Organics:
	<u>-</u>	Dose Absorbed per Unit Area per Event	mg/cm²-event	see Attachment 4	USEPA, 1999a	see Attachment 4	USEPA, 1999a	Chronic Dally Intake (CDI) (mg/kg-day) =
	& AS	Skin Surface Area Available for Contact	cm ₂	2,900	USEPA, 2000	2,900	USEPA, 2000	
	₋	Permeability Constant	cm/hr	chemical specific	USEPA, 2000	chemical specific	USEPA, 2000	DAXSAXEVXEFXED
	<u></u>	Event Time	hrs/event	2.5	Prof. Judgement	0.5	Prof. Judgement	BW×AT
	<u></u>	Event Frequency	event/day	-	Prof. Judgement	-	Prof. Judgement	
	H	Exposure Frequency	days/year	8	Prof. Judgement	30	Prof. Judgement	Inorganics:
		Exposure Duration	years	9	USEPA, 1997	2	USEPA, 1997	CDI (mg/kg-day) ==
	BW	Body Weight	kg	15	USEPA, 1997	15	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	CW x SA x PC x ET x EV x EF x ED x CF1 x CF2
	A-TA	Averaging Time (Non-Cancer)	days	2,190	USEPA, 1989	730	USEPA, 1989	BW×AT
	F.	Conversion Factor 1	L/cm³	0.001	•	0.001	:	
	CF2	Conversion Factor 2	₽µ/gm	0.001	:	0.001	:	-

TABLE J-18 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Sediment
Exposure Medium: Sediment
Exposure Point: Hoosic River
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-6)

Intake Equation/ Model Name	Chronic Daily Intake (CDI) (mg/kg-day) = CS x IR x FI x EF x ED x CF BW x AT	CDI (mg/kg-day) = CS x SA x AF x EF x ED x DAF x CF BW x AT
CT. Rationale/ Reference	see Table 3.18 USEPA, 1997 Prof. Judgement Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989	see Table 3.18 USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1989 USEPA, 1989
CT Value	see Table 3.18 100 1 : 30 2 15 25,550 730 0.000001	see Table 3.18 2,900 0.3 30 2 chemical specific 15 25,550 730 0.0000001
RME Rationale/ Reference	see Table 3.18 USEPA, 1997 Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989	see Table 3.18 USEPA, 2000 USEPA, 2000 Prof. Judgement USEPA, 1997 USEPA, 1997 USEPA, 1989 USEPA, 1989
RME Value	see Table 3.18 200 1 60 6 15 25,550 2,190 0.0000001	see Table 3.18 2,900 0.3 60 6 chemical specific 15 25,550 2,190 0.0000001
Units	mg/kg mg/day unitless days/year years kg days days kg/mg	mg/kg cm² mg/cm²-day days/year years kg days days
Parameter Definition	Chemical Concentration in Sediment Ingestion Rate of Sediment Fraction Ingested Exposure Frequency Exposure Duration Body Weight Averaging Time (Cancer) Averaging Time (Non-Cancer) Conversion Factor	Chemical Concentration in Soil Skin Surface Area Available for Contact Skin Adherence Factor Exposure Frequency Exposure Duration Dermal Absorption Factor Body Weight Averaging Time (Cancer) Averaging Time (Non-Cancer) Conversion Factor
Parameter Code	CS EF EF ED EV AT-C A	SA SA SA AF BF BF BW BW AT-C AT-C AT-C
Exposure Route	Ingestion	Dermal

TABLE J-19 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current Medium: Groundwater Exposure Medium: Groundwater Exposure Point: Tap Water (Residential Wells) Receptor Population: Resident Receptor Age: Adult

					-:-		==	==
Intake Equation/ Model Name	Chronic Daily Intake (CDI) (mg/kg-day) =	CW x IR x EF x ED x CF1	BW×AT					
CT Rationale/ Reference	see Tables 3.19 to 3.26	USEPA, 1994c	USEPA, 1994c	USEPA, 1997	;	USEPA, 1997	USEPA, 1989	USEPA, 1989
CT Value	see Tables 3.19 to 3.26	4.1	350		0,001	70	25,550	2,555
RME Rationale/ Reference	see Tables 3.19 to see Tables 3.19 to 3.26 3.26	USEPA, 1994c	USEPA, 1994c	USEPA, 1997	;	USEPA, 1997	USEPA, 1989	USEPA, 1989
RME Value	see Tables 3.19 to 3.26	8	350	24	0.001	70	25,550	8,760
Units	η/6π	liters/day	days/year	years	Bπ/βш	ķ	days	days
Parameter Definition	Chemical Concentration in Water	Ingestion Rate of Water	Exposure Frequency	Exposure Duration	Conversion Factor 1	Body Weight	AT-C Averaging Time (Cancer)	AT-N Averaging Time (Non-Cancer)
Parameter Code	» C	R-W	늅	<u>a</u>	F.	BW	AT-C	AT-N
Exposure Route Parameter Code	Ingestion							

TABLE J-20 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Current
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: Tap Water (Residential Wells)
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)

	====						_		_
Intake Equation/	Model Name	Chronic Daily Intake (CDI) (mg/kg-day) =	CW x IR x EF x ED x CF1	BW×AT					
CT	Rationale/ Reference	see Tables 3.19 to 3.26	USEPA, 1997	USEPA, 1994c	USEPA, 1994c	;	USEPA, 1997	USEPA, 1989	USEPA, 1989
ե	Value	see Tables 3.19 to 3.26	0.87	350	2	0.001	15	25,550	730
RME	Rationale/ Reference	see Tables 3.19 to see Tables 3.19 to 3.26 3.26	USEPA, 1997	USEPA, 1994c	USEPA, 1994c	:	USEPA, 1997	USEPA, 1989	USEPA, 1989
RME	Value	see Tables 3.19 to 3.26	7.	350	φ	0.001	15	25,550	2,190
Units		Hg/L	liters/day	days/year	years	£π/£ш	Đ.	days	days
Parameter Definition		Chemical Concentration in Water	IR-W Ingestion Rate of Water	Exposure Frequency	Exposure Duration	Conversion Factor 1	Body Weight	AT-C Averaging Time (Cancer)	AT-N Averaging Time (Non-Cancer)
Parameter	Code	cw	IR-W	Ш	<u></u>	F _O	BW	AT-C	AT-N
Exposure Route Parameter		Ingestion							

TABLE J-21 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-Site/Off-Site Wells
Receptor Population: Resident
Receptor Age: Adult

Exposure Route Parameter Code	Parameter Code	Parameter Definition	Units	RME Value	RME Rationale/ Reference	CT Value	CT Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Š	Chemical Concentration in Water	מער	see Tables 3.27 to 3.49	see Tables 3.27 to see Tables 3.27 to see Tables 3.27 to 3.49		see	Chronic Daily Intake (CDI) (morko-day) ≡
,	IR-W	Ingestion Rate of Water	liters/day	7	USEPA, 1994c	1.4	USEPA, 1994c	CW × IR × EF × ED × CF1
	出	Exposure Frequency	days/year	350	USEPA, 1994c	350	USEPA, 1994c	BW×AT
		Exposure Duration	years	. 54	USEPA, 1997	7	USEPA, 1997	
	CF.	Conversion Factor 1	6π/6w	0.001	;	0.001	,	
	BW	Body Weight	kg	02	USEPA, 1997	20	USEPA, 1997	
	AT-C	Averaging Time (Cancer)	days	25,550	USEPA, 1989	25,550	USEPA, 1989	
	AT-N	Averaging Time (Non-Cancer)	davs	8.760	USEPA, 1989	2.555	USEPA, 1989	

TABLE J-22 VALUES USED FOR DAILY INTAKE CALCULATIONS

POWNAL TANNERY

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Groundwater
Exposure Point: On-Site/Off-Site Wells
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)

	=	$\overline{}$	_		_				=	=
Intake Equation/ Model Name			Chronic Daily Intake (CDI) (mg/kg-day) ≃	CW x IR x EF x ED x CF1	BW×AT					
CT Rationale/	Reference	see Tables 3.27 to	3.49	USEPA, 1997	USEPA, 1994c	USEPA, 1994c	;	USEPA, 1997	USEPA, 1989	USEPA, 1989
CT		see Tables 3.27 to	3.49	0.87	350	2	0.001	15	25,550	730
RME Rationale/	Reference	see Tables 3.27 to see Tables 3.27 to see Tables 3.27 to	3.49	USEPA, 1997	USEPA, 1994c	USEPA, 1994c	;	USEPA, 1997	USEPA, 1989	USEPA, 1989
RME		see Tables 3.27 to	3.49	5:1	350	9	0.001	15	25,550	2.190
Units			Hg/L	liters/day	days/year	years	6π/6ш	kg	days	davs
Parameter Definition			Chemical Concentration in Water	Ingestion Rate of Water	Exposure Frequency	Exposure Duration	Conversion Factor 1	Body Weight	Averaging Time (Cancer)	AT-N Averaging Time (Non-Cancer)
Parameter Code			<u>S</u>	IR-W	Ш	<u>u</u>	F.	BW B	AT-C	V-LY
Exposure Route Parameter Code			Ingestion							

TABLE J-23 NON-CANCER TOXICITY DATA -- ORAL/DERMAL POWNAL TANNERY

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YY)
1,2-Dichlorobenzene	Chronic	9E-02	mg/kg-day	(4)	9E-02	mg/kg-day	NOAEL	1000	RIS	02/01/01
1,3-Dichlorobenzene	Chronic	9E-04	mg/kg-day	(4) (4)	9E-04	mg/kg-day	t de	₹ ₹	NCEA	05/88
1,4-Dichlorobenzene	Chronic	3E-02	mg/kg-day	(4)	3E-02	mg/kg-day	N/A	N/A	NCEA	96/50
Benzene	Chronic	3E-03	mg/kg-day	(4)	3E-03	mg/kg-day	N/A	N/A	NCEA	86/50
Bromodichloromethane	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Kidney	1000	RIS	02/01/01
Carbon tetrachloride	Chronic	7E-04	mg/kg-day	(4)	7E-04	mg/kg-day	Liver	1000	IRIS	02/01/01
Chlorobenzene	Chronic	2E-02	mg/kg-day	(4)	2 E -02	mg/kg-day	Liver	1000	IRIS	02/01/01
Chloroform	Chronic	1E-02	mg/kg-day	(4)	. 1 E- 02	mg/kg-day	Liver	1000	IRIS	02/01/01
Methyl tert-butyl ether	NA VA	N/A	ΝΑ	N/A	N/A	ΑN	N/A	N/A	A/N	Ψ/N
Methylene Chloride	Chronic	6E-02	mg/kg-day	(4)	6E-02	mg/kg-day	Liver	100	IRIS	02/01/01
Tetrachloroethylene	Chronic	1E-02	mg/kg-day	(4)	1E-02	mg/kg-day	Liver	1000	RIS	02/01/01
Trichloroethene	Chronic	6E-03	mg/kg-day	(4)	6E-03	mg/kg-day	N/A	N/A	NCEA	05/98
Xylene (total)	Chronic	2E+00	mg/kg-day	(4)	2E+00	mg/kg-day	Nervous System	100	ଞ୍ଚ	02/01/01
2-Methylnaphthalene (3)	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Body Weight	3000	RIS	02/01/01
4-Methylphenol	Chronic	5 E -03	mg/kg-day	(4)	5 E -03	mg/kg-day	Nervous System	1000	HEAST	1997
Acetophenone	Chronic	1E-01	mg/kg-day	(4)	1 E -01	mg/kg-day	NOAEL	3000	RIS	02/01/01
Atrazine	Chronic	4E-02	mg/kg-day	(4)	4E-02	mg/kg-day	Whole body	901	IRIS	02/01/01
Benzo(a)anthracene	A/N	A/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(a)pyrene	N/A	A/N	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Benzo(b)fluoranthene	N/A	Υ/N	N.	N/A	ΑN	N/A	N/A	N/A	N/A	N/A
Benzo(k)fluoranthene	₹/Z	A/N	A/N	Α'N	A/Z	N/A	A/A	N/A	A/N	A/N
bis(2-Chloroethoxy)methane	ΑN	ΥX	A/N	N/A	A/A	A'N	N/A	N/A	N/A	N/A
Bis(2-chloroethyl)ether	A/A	A/A	A N	Y/X	N/A	A/N	N/A	N/A	N/A	Ϋ́
Bis(2-ethylhexyl)phthalate	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Liver	1000	IRIS	02/01/01
Carbazole	N/A	A/A	A/X	N/A	Ϋ́	N/A	N/A	ΝΆ	N/A	N/A
Dibenz(a,h)anthracene	A/A	ΑX	A/A	N/A	N/A	N/A	N/A	N/A	NA	N/A
Indeno(1,2,3-cd)pyrene	N/A	N/A	ΝΑ	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitroso-di-n-propylamine	A/N	A/N	A/N	N/A	N/A	A/N	A/N	N/A	N/A	A/N
Naphthalene	ΑŅ	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Body Welght	3000	RIS	02/01/01
Nitrobenzene	Chronic	5E-04	mg/kg-day	(4)	5E-04	mg/kg-day	Blood	10000	IRIS	02/01/01
Pentachlorophenol	Chronic	3E-02	mg/kg-day	(4)	3E-02	mg/kg-day	Kidney	100	IRIS	02/01/01
Phenanthrene (3)	N/A	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Body Weight	3000	IRIS	02/01/01

TABLE J-23 NON-CANCER TOXICITY DATA -- ORALDERMAL POWNAL TANNERY

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YY)
4,4'-DDE	N/A	ΑN	ΝΆ	N/A	N/A	N/A	N/A	ΝΆ	Ν/A	N/A
Aldrin	Chronic	3E-05	mg/kg-day	(4)	3E-05	mg/kg-day	Liver	1000	IRIS	02/01/01
alpha-BHC	A/Z	N/A	ΝΆ	N/A	N/A	ΑN	N/A	N/A	N/A	ΑŅ
Aroclor 1242 (3)	Chronic	2E-05	mg/kg-day	<u>\$</u>	2E-05	mg/kg-day	Immune System	300	IRIS	02/01/01
Arocior 1248 (3)	Chronic	2E-05	mg/kg-day	(4)	2E-05	mg/kg-day	Immune System	300	RIS	02/01/01
Aroclor 1254	Chronic	2E-05	mg/kg-day	(4)	2E-05	mg/kg-day	immune System	300	RIS	02/01/01
Aroclor 1260 (3)	Chronic	2E-05	mg/kg-day	(4)	2E-05	mg/kg-day	Immune System	300	IRIS	02/01/01
beta-BHC	A/N	ΥX	N/A	N/A	N/A	N/A	N/A	A/N	NA	A/A
delta-BHC	N/A	N/A	ΑN	Y/N	A/N	A/N	A'N	N/A	N/A	N/A
Dieldrin	Chronic	5E-05	mg/kg-day	(4)	5E-05	mg/kg-day	Liver	100	IRIS	02/01/01
Heptachlor	Chronic	5E-04	mg/kg-day	(4)	5E-04	mg/kg-day	Liver	300	IRIS	02/01/01
Heptachlor epoxide	Chronic	1E-05	mg/kg-day	(4)	1E-05	mg/kg-day	Liver	1000	SIR	02/01/01
РСВ ТЕО	NA	Υ/Z	A/N	N/A	Ϋ́N	N/A	N/A	N/A	A/Z	N/A
Dioxin TEQ	N/A	Ϋ́	A'N	N/A	ΑΝ	A/N	A/A	N/A	N/A	N/A
Antimony	Chronic	4E-04	mg/kg-day	0.15	6E-05	mg/kg-day	Blood	1000	IRIS	02/01/01
Arsenic	Chranic	3E-04	mg/kg-day	(4)	3E-04	mg/kg-day	Skin	ю	RIS	02/01/01
Barium	Chronic	7E-02	mg/kg-day	20.0	5E-03	mg/kg-day	NOAEL	ო	IRIS	02/01/01
Cadmium (food)	Chronic	1E-03	mg/kg-day	0.01	1E-05	mg/kg-day	Kidney	10	RIS	02/01/01
Chromium (3)	Chronic	2E+00	mg/kg-day	0,013	2.0E-02	mg/kg-day	NOAEL	1000	RIS	02/01/01
Chromium VI	Chronic	3E-03	mg/kg-day	0.013	3.9E-05	mg/kg-day	NOAEL	300	IRIS	02/01/01
Cyanide, free	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Nervous System	200	IRIS	02/01/01
Manganese (soils) (3)	Chronic	7 E -02	mg/kg-day	0.04	2.8E-03	mg/kg-day	Nervous System	-	IRIS	02/01/01
Manganese (water) (3)	Chronic	2E-02	mg/kg-day	0.04	9.6E-04	mg/kg-day	Nervous System	-	SIRI	02/01/01
Mercury (inorganic - water)	Chronic	3E-04	mg/kg-day	0.07	2.1E-05	mg/kg-day	Immune System	1000	Ris	02/01/01
Mercury (organic - soils) (3)	Chronic	1E-04	mg/kg-day	(4)	16-04	mg/kg-day	Nervous System	40	RIS	02/01/01
Thaillum (3)	Chronic	8E-05	mg/kg-day	(4)	8E-05	mg/kg-day	NOAEL	3000	RIS	02/01/01
Vanadium	Chronic	9E-03	mg/kg-day	0.026	2.3E-04	mg/kg-day	NOAEL	100	IRIS	02/01/01

TABLE J-23 NON-CANCER TOXICITY DATA -- ORAL/DERMAL POWNAL TANNERY

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Oral to Dermal Adjustment Factor (1)	Adjusted Dermal RfD (2)	Units	Primary Target Organ	Combined Uncertainty/Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ (MM/DD/YY)
(1) Antimony oral absorption efficiency from ATSDR, 1997.	afficiency from ATSI	DR, 1997.			IRIS ≈ Integrated Risk Information System	sk Information Syst	em			
Barium oral absorption efficiency from ATSDR, 1997.	ficiency from ATSDF	ર, 1997.			HEAST = Health Effects Assessment Summary Tables	ects Assessment 5	ummary Tables			
Cadmium oral absorption efficiency from McLellan et al., 1978.	efficiency from McL	ellan et al., 1978	œ'		NCEA = National Center for Environmental Assessment	inter for Environme	ntal Assessment			
Chromlum oral absorption efficiency from Donaldson and Barreras	n efficiency from Dor	naldson and Bar	rreras, 1996.		N/A ≃ Not Applicable	•				
Manganese oral absorption efficiency from Davidsson et al., 1989.	on efficiency from D≀	avidsson et ai.,	1989.	-	NOAEL = No Observable Adverse Effect Level	√able Adverse Effe	at Level			
Mercury oral absorption efficiency from USEPA, 2000.	fficiency from USEF	A, 2000.								
Vanadium oral absorption efficiency from Conklin et al., 1982.	efficiency from Con	ıklin et al., 1982.								
(2) Calculated as: (oral RfD) x (oral to dermal adjustment factor).	t (oral to dermal adju	ustment factor).								
(3) RfD for Aroclor 1254 used as a surrogate for Aroclor 1242, Aroclor 1248, and Aroclor 1260.	l as a surrogate for A	Aroclor 1242, Aı	roclor 1248, ai		RfD for chromium is based on Chromium III.	based on Chromiu	n III.			
RfDs for managanese are based on total allowable intake (10 mg/day) minus the background	based on total allow	wabie intake (10) mg/day) min		RfD for thallium is based on thallium sulfate.	ised on thaillum su	fate.			
intake (5 mg/day). The remaining intake (5 mg/day) is divided by 70 kg.	he remaining intake	(5 mg/day) is di	vided by 70 kg		RfD for mercury (organic), based on methylmercury.	anic), based on me	thylmercury.			
RfD for naphthalene used as a surrogate for phenanthrene and 2-methylnaphthalene.	i as a surrogate for p	phenanthrene a	nd 2-methylna	phthalene.						

- (4) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral reference dose is necessary.
 (5) Permeability constants (Kp) used for surface water absorption calculations: 1E-03 cm/hr for arsenic, manganese, mercury, thallium, and vanadium; 2E-03 cm/hr for chromium; 1.4 cm/hr for PCB TEQ and dioxin TEQ (USEPA, 1999a); for organics, see attachment 4.

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TABLE J-24 NON-CANCER TOXICITY DATA -- INHALATION

POWNAL TANNERY

						==		_	===				
Dates (MM/DD/YY)	N/A	A/N	ď/Z	02/01/01	A/N	A/A	A/A	A/X	A/N	A/A	A/A	A/A	N/A
Sources of RfC:RfD: Target Organ	N/A	N/A	A/N	IRIS	N/A	N/A	N/A	N/A	N/A	N/A	A/A	N/A	N/A
Combined Uncertainty/Modifying Factors	A/N	N/A	ΑŻ	100	N/A	N/A	A/N	N/A	A/N	ΑΝ	N/A	N/A	N/A
Primary Target Organ	A/N	A/N	A/S	Liver	A/A	A/S	A/N	N/A	N/A	N/A	A/N	A/N	N/A
Units	N/A	A/N	A/A	,	A/N	A/N	A/N	A/A	A/A	A/N	₹/Z	ΑŻ	ď.
Adjusted Inhalation RfD	A/N	N/A	A/A	ı	A/N	A/S	A/N	A/A	A/N	A/N	N/A	A/Z	A/N
Units	A/S	N/A	N/A	ug/m³	N/A	N/A	A/N	N/A	N/A	N/A	N/A	A/N	N/A
Value Inhalation RfC	A/N	N/A	N/A	8E+02	N/A	N/A	N/A	A/A	N/A	N/A	N/A	A/N	N/A
Chronic/ Subchronic	N/A	N/A	A/Z	Chronic	N/A	N/A	A/N	A/A	A/A	A/N	A/N	A/N	Υ/Z
Chemical of Potential Concern	1,2-Dichlorobenzene	1,2-Dichloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	Benzene	Bromodichloromethane	Carbon tetrachloride	Chlorobenzene	Chloroform	Methylene chloride	Tetrachloroethylene	Trichloroethene	Xylene (total)

IRIS = Integrated Risk Information System

N/A = Not Applicable; Inhalation not evaluated as a pathway of concern.

TABLE J-25 CANCER TOXICITY DATA -- ORAL/DERMAL POWNAL TANNERY

Chemical of Potential	Oral Cancer Slope Factor	Oral to Dermal Adjustment	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence Category	Source	Date (MM/DD/YY)
Concern		Factor					
1,2-Dichlorobenzene	N/A	ΥN	N/A	A/N	٥	IRIS	02/01/01
1,2-Dichloroethane	9.1E-02	ε	9.15-02	(mg/kg-day) *	B2	IRIS	02/01/01
1,3-Dichlorobenzene	N/A	ΥZ	N/A	N/A	۵	IRIS	02/01/01
1,4-Dichlorobenzene	2.4E-02	3	2.4E-02	(mg/kg-day) "	B2	HEAST	1997
Benzene	5.5E-02	(1)	5.5E-02	(mg/kg-day) -1	٩	RIS	02/01/01
Bromodichloromethane	6.2 E- 02	3	6.2E-02	(mg/kg-day)	B2	RIS	02/01/01
Carbon tetrachloride	1.3 E- 01	(1)	1.3E-01	(mg/kg-day) 1	B2	IRIS	02/01/01
Chlorobenzene	N/A	N/A	NA	N/A	۵	IRIS	02/01/01
Chloroform	6.1E-03	(1)	6.1E-03	(mg/kg-day) 1	32	RIS	02/01/01
Methyl tert-butyl ether	N/A	N/A	Y/X	N/A	N/A	Ϋ́Z	ΑΝ
Methylene chloride	7.5E-03	Ê	7.5E-03	(mg/kg-day) 1	82	IRIS	02/01/01
Tetrachloroethylene	5.2E-02	(5)	5.2E-02	(mg/kg-day) *1	B2	NCEA	05/98
Trichloroethene	1.15-02	3	1.1E-02	(mg/kg-day) -1	82	NCEA	05/98
Xylene (total)	N/A	A/N	N/A	N/A	۵	RIS	02/01/01
2-Methylnaphthalene	ΝΑ	ΝΆ	N/A	Ϋ́Α	۵	RIS	02/01/01
4-Methylphenol	N/A	₹/Z	N/A	A'N	υ	IRIS	02/01/01
Acetophenone	N/A	٩Z	Y/A	A/A	۵	IRIS	02/01/01
Atrazine	2.2E-01	Ξ	2.2E-01	(mg/kg-day) -1	υ	HEAST	1997
Benzo(a)anthracene	7.3E-01	3	7.3E-01	(mg/kg-day) -1	B2	IRIS	02/01/01
Benzo(a)pyrene	7.3E+00	3	7.3E+00	(mg/kg-day) -1	B2	IRIS	02/01/01
Benzo(b)fluoranthene	7.3E-01	(1)	7.35-01	(mg/kg-day) -1	B2	IRIS	02/01/01
Benzo(k)fluoranthene	7.3E-02	3	7.3E-02	(mg/kg-day) -1	B2	RIS	02/01/01
bis(2-Chloroethoxy)methane	N/A	K/N	N/A	N/A	۵	IRIS	02/01/01
Bis(2-chloroethyl)ether	1.1E+00	(1)	1.15+00	(mg/kg-day) -1	82	IRIS	02/01/01
Bis(2-ethylhexyl)phthalate	1.45-02	3	1.4E-02	(mg/kg-day) -1	B2	IRIS	02/01/01
Carbazole	2.05-02	(1)	2.0E-02	(mg/kg-day) 1	B2	HEAST	1997
Dibenz(a,h)anthracene	7.3E+00	(1)	7.3E+00	(mg/kg-day) -1	B2	IRIS	02/01/01
Indeno(1,2,3-cd)pyrene	7.3E-01	Ξ	7.3E-01	(mg/kg-day) 1	B2	IRIS	02/01/01
N-Nitroso-di-n-propylamine	7.0E+00	Ξ	7.0E+00	(mg/kg-day) -1	82	IRIS	02/01/01
Naphthalene	N/A	N/A	N/A	Ϋ́N	O	RIS	02/01/01
Nitrobenzene	N/A	A/A	N/A	N/A	۵.	IRIS	02/01/01
Pentachlorophenol	1.2 E- 01	ε	1.2E-01	' (mg/kg-day)	B2	RIS	02/01/01
Phenanthrene	N/A	N/A	N/A	N/A	۵	IRIS	02/01/01

TABLE J-25 CANCER TOXICITY DATA -- ORALDERMAL POWNAL TANNERY

Chemical of Potential Concern	Oral Cancer Slope Factor	Oral to Dermal Adjustment Factor	Adjusted Dermal Cancer Slope Factor (2)	Units	Weight of Evidence Category	Source	Date (MM/DD/YY)
4,4'-DDE	3.4E-01	(μ)	3.4E-01	(mg/kg-day) -1	B2	IRIS	02/01/01
Aldrin	1.7E+01	ε	1.7E+01	(mg/kg-day) -1	82	RIS	02/01/01
alpha-BHC	6.3E+00	£	6.3E+00	(mg/kg-day) -1	O	IRIS	02/01/01
Aroclor 1242	2.0E+00	£	2.05+00	(mg/kg-day) -1	82	RIS	02/01/01
Aroclar 1248	2.0€+00	£	2.0€+00	(mg/kg-day) -1	B2	IRIS	02/01/01
Aroclor 1254	2.0E+00	£	2.05+00	(mg/kg-day)	82	IRIS	02/01/01
Aroclar 1260	2.05+00	£	2.0€+00	(mg/kg-day) -1	B2	RIS	02/01/01
beta-BHC	1,8E+00	€	1.8E+00	(mg/kg-day) -1	υ	IRIS	02/01/01
delta-BHC	N/A	NA	N/A	N/A	۵	IRIS	02/01/01
Dieldrin	1.6E+01	3	1.6E+01	(mg/kg-day) 1	82	IRIS	02/01/01
Heptachlor	4.5E+00	Œ	4.5E+00	(mg/kg-day) -1	82	RIS	02/01/01
Heptachlor epoxide	9.1E+00	ε	9.1E+00	(mg/kg-day) *1	B2	RIS	02/01/01
PCB TEQ	1.5E+05	ε	1.5E+05	(mg/kg-day) -1	B 2	HEAST	1997
Dioxin TEQ	1.5E+05	3	1.5E+05	(mg/kg-day)	B 2	HEAST	1997
Antimony	NA	N/A	N/A	V/A	۵	IRIS	02/01/01
Arsenic	1.5E+00	3	1.5E+00	(mg/kg-day) -1	∢	IRIS	02/01/01
Barium	N/A	N/A	N/A	ΝΆ	۵	IRIS	02/01/01
Cadmium	N/A	N/A	ΝΆ	N/A	۵	IRIS	02/01/01
Chromium	NA	N/A	NA	N/A	۵	IRIS	02/01/01
Chromium VI	N/A	A/N	NA	N/A	Ω	IRIS	02/01/01
Cyanide, free	N/A	A/N	N/A	N/A	۵	IRIS	02/01/01
Manganese (solls)	A/A	N/A	N/A	A/N	۵	IRIS	02/01/01
Manganese (water)	VN	Α'n	N/A	N/A	ٔ۵	IRIS	02/01/01
Mercury (inorganic - water)	Α'N	A/N	N/A	N/A	O	IRIS	02/01/01
Mercury (organic - soils)	N/A	A/N	N/A	A/A	υ	IRIS	02/01/01
Thaillum	ΑN	A/Z	N/A	N/A	۵	IRIS	02/01/01
Vanadium	N/A	N/A	N/A	N/A	۵	IRIS	02/01/01

TABLE J-25 CANCER TOXICITY DATA -- ORAL'DERMAL POWNAL TANNERY

Chemical	Oral Cancer Slope Factor	Oral to Dermal	Adjusted Dermal	Units	Weight of Evidence	Source	Date
of Potential		Adjustment	Cancer Slope Factor (2)		Category		(MM/DD/YY)
Concern		Factor					

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

CT = Central Tendency

NCEA = National Center for Environmental Assessment
Stope factor for benzo(a)pyrene, along with the appropriate relative potency factor

(USEPA, 1993), used for the other carcinogenic PAHs.

Weight of evidence for mercury (organic), based on methylmercury.

(1) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral slope factor is necessary. (2) Calculated as: (oral slope factor) / (oral to dermal adjustment factor)

EPA Group:

A • Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available B2 - Probable human carcinogen - indicates sufficient evidence in animals and

Inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

TABLE J-26 CANCER TOXICITY DATA -- INHALATION

POWNAL TANNERY

Chemical of Potential	Unit Risk	Units	Adjustment	Inhalation Cancer Slope Factor	Units	Weight of Evidence/ Cancer Guideline	Source	Date (MM/DD/YY)
Concern						Description		·
1,2-Dichlorobenzene	N/A	N/A	. V /N	A/A	· VA		IRIS	02/01/01
1,2-Dichloroethane	2.6E-05	ug/m³ -1	·			B2	IRIS	02/01/01
1,3-Dichlorobenzene	N/A	A/N	N/A	N/A	N/A	۵	IRIS	02/01/01
1,4-Dichlorobenzene	A/X	V/V	A/N	ΑN	A/N	O	HEAST	1997
Benzene	7.8E-06	ug/m³ -1	•	,	ı	4	IRIS	02/01/01
Bromodichloromethane	N/A	A/N	N/A	N/A	A/A	B2	IRIS	02/01/01
Carbon tetrachloride	1.5E-05	ug/m³ -1	J	,	·	B2	IRIS	02/01/01
Chlorobenzene	N/A	A/N	N/A	A/N	N/A	۵	IRIS	02/01/01
Chloroform	2.3E-05	ug/m³ -1	,	,	ı	B2	IRIS	.02/01/01
Methylene chloride	4.7E-07	ug/m³ -1	1	•	•	B2	IRIS	02/01/01
Tetrachloroethylene	9.5E-07	ug/m³ -1	,	,	•	B2	NCEA	5/98
Trichloroethene	1.7E-06	ug/m³ -1	•	,		B2	NCEA	5/98
Xylene (total)	N/A	N/A	A/N	A/N	A/N	۵	IRIS	02/01/01

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

NCEA = National Center for Environmental Assessment

N/A = Not Applicable; Inhalation not evaluated as a pathway of concern.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and Inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

TABLE J-27 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Current Receptor Population: Trespasser Receptor Age: Adolescent (Ages 9-18)

Medium	Exposure	Exposure	Chemical		Carcin	Carcinogenic Risk		Chemical	_	Non-Carcir	Non-Carcinogenic Hazard Quotient	d Quotient	
	Medium	Point			Young	Young Child + Adult					Young Child		
				Ingestion	Ingestion Inhalation Dermal	Dermal	Exposure		Primary	Ingestion Inhalation	Inhalation	Dermal	Exposure
							Routes Total		Target Organ				Routes Total
Soils	Soil/Sludge	Lagoon 5											
								Chromlum	NOAEL	2E+00	:	:	2E+00
								(total)		2E+00	;	;	2E+00
			Total Risk Across All Media and All Exposure Routes	oss All Media a	nd All Exposi	ure Routes	N/A	Tot	Total Hazard Index Across Ali Media and All Exposure Routes	cross All Medi	a and All Expo	sure Routes	2E+00

N/A	N/A	N/A	N/A	A/A	A/A	N/A
Total Skin HI =	Total Nervous System HI ≈	Total immune System HI =	Total Kidney HI =	Total Blood HI ≈	Total Growth HI =	Total Liver HI =

TABLE J-28
RISK ASSESSMENT SUMMARY
REASONABLE MAXIMUM EXPOSURE

		,	_							
	Exposure Routes Total						4E+01	3E+00	5E+01	5E+01
d Quatient	Dermal						:	:	:	sure Routes
Non-Carcinogenic Hazard Quotient Young Child	Inhalation						;	:	•	la and All Expo
Non-Carc	Ingestion						4E+01	3€+00	5E+01	oss All Med
	Primary Target Organ						NOAEL	Nervous System		Total Hazard Index Across All Media and All Exposure Routes
Chemical							Chromium	Mercury	(total)	Tot
	Exposure Routes Total	1E-06	1E-05	4E-06	1E-03	7E-06			1E-03	1E-03
Carcinogenic Risk Young Child + Adult	Dermaî	4E-07	4E-06	2E-06	1E-04	8E-07			1E-04	ure Routes
Carcin Young	Inhalation	:	;	:	:	;			;	d All Exposi
	Ingestion	7E-07	7E-06	2E-06	9E-04	6E-06			9E-04	ss All Media an
Chemical		Benzo(a)anthracene	Benzo(a)pyrene	Pentachlorophenol	Dioxin TEQ	Arsenic			(total)	Total Risk Across All Media and All Exposure Routes
Exposure Point		Lagoon 1								
Exposure	-	Soil/Sludge								
Medium		Soils								

A/N	3E+00	A/A	N/A	N/A	N/A	A/A
Total Skin HI ≃	Total Nervous System HI =	Total Immune System HI ≈	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver Hi =

TABLE J-29 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Park Visitor Receptor Age: Young Child (Ages 1-6)/Adult

Routes Total Exposure 1E+01 1E+01 1**E**+01 Total Hazard Index Across All Media and All Exposure Routes Non-Carcinogenic Hazard Quotlent Dermal : Young Child Inhalation ; Ingestion 15+01 1E+01 Target Organ Primary NOAEL (total) Chemical Chromium Routes Total Exposure Α× Young Child + Adult Carcinogenic Risk Total Risk Across All Media and All Exposure Routes Inhalation Dermal Ingestion Chemical Exposure Lagoon 1 Point Soil/Sludge Medium Exposure Medium Soils

A/N	N/A	N/A	N/A	N/A	N/A	N/A
Total Skin HI ≈	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-30 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Park Visitor Receptor Age: Young Child (Ages 1-6)/Adult

Exposure Routes Total		2E+01	2E+01			26+01
Dermal		:	:			Suite Routes
Inhalation		;	:			is and All Expo
Ingestion		2E+01	2E+01			oss All Med
Primary Target Organ		NOAEL				Total Hazard Index Across All Media and All Exnosure Routes
			(total)			Total
		Chromium	-		·····	
Exposure Routes Total	2E-04	7E-06	2E-04			2E-04
Dermal	2E-05	8E-07	3E-05			ure Routes
Inhalation	:	:	:			nd All Exposi
Ingestion	2E-04	6E-06	2E-04			ss All Media a
	Dloxin TEQ	Arsenic	(total)			Total Risk Across All Media and All Exposure Routes
Exposure Point						
Exposure Medium						
Medium						
	Inhalation Dermal Exposure Primary Ingestion Inhalation Dermal Routes Total Target Organ	Ingestion Inhalation Dermal Exposure Primary Inhalation Dermal Routes Total Routes Total Target Organ 2E-04 2E-04	Soil/Sludge	Soli/Sludge	Soii/Sludge Lagoon 3 Ingestion (total) Inhalation (total) Dermal (t	Soil/Sludge Lagoon 3 Dioxin TEQ 2E-04 2E-04 2E-04 2E-04 2E-04 3E-07 TE-08 Ohromium NOAEL 2E-01 </td

					\Box
ΑŅ	N/A	¥ X	Α̈́	N/A	Ϋ́
Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood Hi =	Total Growth HI =	Total Liver HI =
	Total Nervous System HI = N/A				

TABLE J-31 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

	Exposure	Routes Total	2E+00	3	2E+00			2E+00
rd Quotient	Dermal		:		:			osure Routes
Non-Carclnogenic Hazard Quotient Young Child	Inhalation		;		:		_	ia and All Exp
Non-Caro	Ingestion		2E+00		2E+00			cross All Med
·	Primary	Target Organ	NOAEL	1				Total Hazard Index Across All Media and All Exposure Routes
Chemical			Chromium	5	(total)			Tota
	Exposure	Routes Total	•					N/A
Carcinogenic Risk Young Child + Adult	Dermal							ure Routes
Carcir Young	Inhalation							and All Expos
	Ingestion		 					Total Risk Across All Media and All Exposure Routes
Chemical								Total Risk Acr
Exposure Point			Lagoon 3				:	
Exposure Medium			Soil/Sludge					
Medium			Soils					

N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney Hl =	Total Blood HI =	Total Growth HI =	Total Liver HI =
	Total Nerv	Total Imm	-		-	

TABLE J-32 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

1
Scenario Limerrame: Future
Receptor Population: Park Visitor
Receptor Age: Young Child (Ages 1-5)/Adult

Medium	Exposure Medium	Exposure Point	Chemica!		Carcir Young	Carcinogenic Risk Young Child + Adult		Chemical		Non-Car	Non-Carcinogenic Hazard Quotient Young Child	ard Quotient d	
				Ingestion	Inhalation	Dermal	Exposure Routes Total		Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soils	Soil/Sludge	Lagoon 5	Benzo(a)pyrene	1E-06	:	6E-07	2E-06						
			N-Nitroso-dl-n-propylamine	2E-06	:	:	2 E -06						
			Dloxin TEQ	1E-04	:	2E-05	2E-04						
- <u></u>			Arsenic	4E-06	:	5E-07	4E-06	1	<u> </u>	1 0 0			,
			(total)	2E-04	;	2E-05	2E-04	(total)		1E+01	: :	: :	16+01
					•					-	. :		
			Total Risk Across All Media and All Exposure Routes	ss Ali Media a	nd All Expos	ure Routes	2E-04	Total H	Total Hazard Index Across All Media and All Exposure Routes	cross All Medi	ia and All Expo	sure Routes	1E+01

A/N	N/A	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver H! =

RISK ASSESSMENT SUMMARY CENTRAL TENDENCY TABLE J-33

POWNAL TANNERY

Receptor Population: Park Visitor Receptor Age: Young Child (Ages 1-8)/Adult

Scenario Timeframe: Future

Total Hazard Index Across All Media and All Exposure Routes Non-Carcinogenic Hazard Quotient Young Child Inhalation : Ingestion 3**E**+00 3E+00 Target Organ Primary NOAEL (total) Chemical Chromium Routes Total Exposure Ϋ́ Young Child + Adult Total Risk Across All Media and All Exposure Routes Carcinogenic Risk Inhalation Dermal Ingestion Chemical Exposure Lagoon 5 Point Soil/Sludge Exposure Medium Medium Soils

Routes Total Exposure

Dermal

3E+00 3€+00

;

1					_		
	N/A	N/A	N/A	N/A	N/A	N/A	N/A
•	Total Skin HI =	Total Nervous System HI ≈	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

3E+00

TABLE J-34 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

1					·					 	=
			Exposure	Routes Total						ΑŻ	
	ard Quotient	þ	Dermai							sure Routes	
	Non-Carcinogenic Hazard Quotient	Young Child	Inhalation							a and All Expo	,
	Non-Ca		Ingestion							oss All Med	
			Primary	Target Organ						Total Hazard Index Across All Media and All Exposure Routes	
	Chemical									Total H	
			Exposure	Routes Total	2E-04	3E-06	2E-06	2E-04		2E-04	
	Carcinogenic Risk	Young Child + Adult	Dermal		3E-05	4E-07	3E-07	3E-05		ure Routes	-
	Carcin	Young	Inhalation		:	;	;	:	·	nd All Exposu	
			Ingestion		2E-04	3 E- 06	2E-06	2E-04		ss All Media ar	
	Chemical				PCB TEQ	Dioxin TEQ	Arsenic	(total)		Total Risk Across All Media and All Exposure Routes	
	Exposure	Point			Hoosic River						
	Exposure	Medium	•		Sediment						
	Medium				Sediment						

TABLE J-35 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Medium Exposure Medium	Exposure Point	Chemical		Carcin Young	Carcinogenic Risk Young Child + Adult		Chemical		Non-Carci	Non-Carcinogenic Hazard Quotient Young Child	d Quotient	
			Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
						Routes Total		Target Organ				Routes Total
Groundwater Groundwater	Tap Water - Residential											
,	Well - RW-003		·				Arsenic	Skin	2E+00	:	;	2E+00
							(total)		2E+00	:	:	2E+00
		Total Risk Across All Media and All Exposure Routes	ss All Media aı	nd All Exposi	ure Routes	N/A	Tota	Total Hazard Index Across All Media and All Exposure Routes	ross All Medi	a and All Expos	sure Routes	2E+00

2E+00	N/A	N/A	N/A	N/A	N/A	N/A
Total Skin HI ≂	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI ≂	Total Growth HI =	Total Liver HI =

TABLE J-36 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

	Exposure	Routes Total	2E+00	2E+00			2E+00
rd Quotient	Dermal		•-	;			sure Routes
inogenic Hazar			-	:			ia and All Expo
Non-Carc	Ingestion		2E+00	2E+00			ross All Med
	Primary	Target Organ	NOAEL				Total Hazard Index Across All Media and All Exposure Routes
Chemical			Thalllum	(total)			Tota
	Exposure	Routes Total					N/A
ogenic Risk Child + Adul	Dermal						ure Routes
Carcli	Inhalation						ind All Expos
	Ingestion					,	ss All Media a
Chemical							Total Risk Across All Media and All Exposure Routes
Exposure	1,00		Tap Water - Residential Well - RW-006				
Exposure			Groundwater				
Medium			Groundwater				
	Exposure Exposure Chemical Carcinogenic Risk Chemical Non-Carcin Medium Point Young Child + Adult	Exposure Exposure Chemical Cardinogenic Risk Chemical Non-Cardinogenic Hazard Quotient Medium Point Point Inhalation Inhalation Dermal Exposure Primary Ingestion Inhalation Dermal	Exposure Chemical Carcinogenic Risk Chemical Chemical Non-Carcinogenic Hazard Quotient Medium Point Young Child + Adult Toung Child + Adult Exposure Primary Ingestion Inhalation Dermal Ingestion Inhalation Inhalation Inhalation Dermal Routes Total Target Organ Target Organ	Exposure Exposure Chemical Carcinogenic Risk Chemical Chemical Non-Carcinogenic Hazard Quotient Medium Point Young Child + Adult Fxposure Primary Ingestion Inhalation Dermal Groundwater Target Organ Well - Rw-006 Target Organ Inhalation Dermal	Exposure Medium Chemical Point Carcinogenic Risk Young Child + Adult Chemical Top Water - Residential Well - RW-006 Chemical Top Water - Residential Reposure Total Routes Total Top Well - RW-006 NOAEL Top Water - Residential Reposure Total Top Well - RW-006 NOAEL Top Water - Residential Reposure Total Routes Total Routes Total Reposure Total Routes Total Route Routes Total R	Exposure Chemical Carcinogenic Risk Chemical Chemical Chemical Non-Carcinogenic Hazard Quotient Medium Point Young Child + Adult Exposure Exposure Primary Ingestion Inhalation Dermal Groundwater Tap Water - Residential Well - RW-006 Ingestion Inhalation Dermal Dermal	Exposure Exposure Chemical Carcinogenic Risk Chemical Chemical Chemical Chemical Non-Carcinogenic Hazard Quotient Medium Point Young Child + Adult Exposure Primary Inhalation Dermal Groundwater Tap Water - Residential Well - RW-006 Noale Child + Adult Noale Child + Adult Dermal Groundwater Well - RW-006 Tap Water - Residential Noale Child + Adult Noale Child + Adult Dermal

	A/A	N/A	N/A	N/A	N/A	N/A	N/A	
•	Total Skin HI =	Total Nervous System HI ≈	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =	•

TABLE J-37 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Total Hazard Index Across All Media and All Exposure Routes Non-Carcinogenic Hazard Quotient Young Child Inhalation : : 1**E**+00 2E+00 3€+00 Nervous System Target Organ (total) Chemical Manganese Arsenic Routes Total Exposure N/A Young Child + Adult Carcinogenic Risk Total Risk Across All Medla and All Exposure Routes Dermal Inhalation Ingestion Chemical Tap Water - Residential Scenario Timeframe: Current Receptor Population: Resident Receptor Age: Young Child (Ages 1-6)/Adult Well - RW-008 Exposure Point Groundwater Medium Exposure Groundwater Medium

Exposure Routes Total

1E+00 2E+00 3E+00

1E+00	2E+00	ΑŅ	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI ≈	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

3E+00

RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE TABLE J-38

POWNAL TANNERY

		Exposure	Routes Total		3E+00	3E+00							3E+00
d Quotient		Dermal				;							sure Routes
Non-Carcinogenic Hazard Quotient	Young Child	Inhalation			:	:		-	-				a and All Expo
Non-Carci		Ingestion			3€+00	3E+00							ross All Medi
		Primary	.Target Organ		Nervous System								Total Hazard Index Across All Media and All Exposure Routes
Chemical					Manganese	(total)							Tote
		Exposure	Routes Total							,			N/A
Carcinogenic Risk	Young Child + Adult	Dermal											ure Routes
Carcir	Young	Inhalation Dermal											ind All Expos
		Ingestion											Total Risk Across All Media and All Exposure Routes
Chemical													Total Risk Acro
Exposure	Point			Tap Water - Residential	Well - RW-010								
Exposure	Medium			Groundwater									
Medium				Groundwater									

	N/A	3E+00	N/A	ΝΆ	N/A	N/A	N/A
,	Total Skin H1 =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood Hi =	Total Growth HI =	Total Liver HI =

RISK ASSESSMENT SUMMARY CENTRAL TENDENCY TABLE J-39

POWNAL TANNERY

	l	 			— -
	d Quotient	Dermal		;	sure Routes
	Non-Carcinogenic Hazard Quotient Young Child	Inhalation	••	:	a and All Expo
	Non-Carci	Ingestion	2E+00	2E+00	oss All Medi
		Primary Target Organ	Nervous System		Total Hazard Index Across All Media and All Exposure Routes
	Chemical		Manganese	(total)	Tota
	ı	Exposure Routes Total			N/A
	Carcinogenic Risk Young Child + Adult	Dermal			ure Routes
	Carcir	Inhalation Dermal			nd All Expos
		Ingestlon			ss Ali Media a
	Chemical				Total Risk Across All Media and All Exposure Routes
Scenario Timeframe: Current Receptor Population: Resident Receptor Age: Young Child (Ages 1-6)/Adult	Exposure Point		Tap Water - Residential Well - RW-010		
Scenario Timeframe: Current Receptor Population: Resident Receptor Age: Young Child (Ag	Exposure		Groundwater		
	Medium		Groundwater		

Routes Total Exposure

2E+00 2E+00

N/A	2E+00	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI ≈	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

2E+00

TABLE J-40 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

ture	sident	ılıd (Ages 1-6)/Adult	
Scenario Timeframe: Future	Receptor Population; Resi	Receptor Age: Young Child (A	

							 	 ==	 	 T
		Exposure	Routes Total		4E+00	4E+00	 			4E+00
rd Quotient		Dermal				:				 osure Routes
Non-Carcinogenic Hazard Quotlent	Young Child	Inhalation			:	:	 			ia and All Expo
Non-Caro		Ingestion			4E+00	4E+00				oss All Med
		Primary	Target Organ		Nervous System					Total Hazard Index Across All Media and All Exposure Routes
Chemical					Manganese	(total)				Tota
		Exposure	Routes Total							N/A
Carcinogenic Risk	Young Child + Adult	Dermal								ure Routes
Carcir	Young	Inhalation						 <u>.</u>		Ind All Expos
		Ingestion								 oss All Media a
Chemical										Total Risk Across All Media and All Exposure Routes
Exposure	Point			On-Site Monitoring Well	MW-104U					
Exposure	Medium			Groundwater						
Medium				Groundwater						

N/A	4E+00	N/A	N/A	N/A	A/N	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI ≈	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J41 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

tient	Dermal Exposure	Routes Total		2E+00	2E+00	 		-	 		Routes 2E+00
Non-Carcinogenic Hazard Quotient Young Child	Inhalation De			:	:						d All Exposure R
Non-Carcinoge You	Ingestion In		;	2E+00	2E+00			-	 		oss All Media an
	Primary	Target Organ	,	Nervous System	•	 	-				Total Hazard Index Across All Media and All Exposure Routes
Chemical				Manganese	(total)						Tota
	Exposure	Routes Total									N/A
Carcinogenic Risk Young Child + Adult	Dermal										ure Routes
Carci	Inhalation										and All Expos
	Ingestion	į									oss All Media
Chemical											Total Risk Across All Media and All Exposure Routes
Éxposure Point			On-Site Monitoring Well	MW-104U							
Exposure Medium			Groundwater								
Medium			Groundwater								

N/A	2E+00	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	. Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-42 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

			ir	_	_	 	 		 	7
	Exposure	Routes Total	2E+00	2E+00	3					2E+00
rd Quotlent	Dermal									sure Routes
Non-Carcinogenic Hazard Quotlent	Ingestion Inhalation			:						ia and All Expo
Non-Carc	Ingestion		2E+00	ο <u>π</u> +00						oss Ail Med
	Primary	Target Organ	Nervous System							Total Hazard Index Across All Media and All Exposure Routes
Chemical			Manganese	(letot)						Tota
	Exposure	Routes Total								N/A
Carcinogenic Risk Young Child + Adult	Dermal							-		ure Routes
Carcir	Inhalation									nd All Exposi
	Ingestion									ss All Media a
Chemical									,	Total Risk Across All Media and All Exposure Routes
Exposure			On-Site Monitoring Well MW-106U							
Exposure			Groundwater							
Medium			Groundwater							

N/A	2E+00	N/A	N/A	N/A	ΝΆ	N/A	
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kldney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =	

TABLE J-43 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

		31						 		 ,
	Exposure Routes Total			3E+00	0E+00	00+B6				9E+00
rd Quotient	Dermal			;	:	:				Sure Routes
Non-Carcinogenic Hazard Quotient Young Child	Inhalation			;	;	:				ia and All Expo
Non-Carc	Ingestion			3€+00	0E+00	00+ ∃ 6				oss All Med
	Primary Target Organ	2	-	Skin	Nervous System		•	•		Total Hazard Index Across All Media and All Exposure Routes
Chemical				Arsenic	Manganese	(total)			-	Tota
	Exposure Routes Total	9E-06		2E-04		2E-04				2E-04
Carcinogenic Risk Young Child + Adult	Dermal	:		;		;				ure Routes
Carcir	Inhalation	:		:		;				nd All Expos
	Ingestion	9E-06		2E-04		2E-04				ss All Media a
Chemical		Dioxin TEQ		Arsenic		(total)				Total Risk Across All Media and All Exposure Routes
Exposure		On-Site Monitoring Well Dioxin TEQ	MW-107R							
Exposure Medium		Groundwater								
Medium		Groundwater								

3E+00	6E+00	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-44 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

	Exposure	1E+00	3E+00	4E+00	4E+00
rd Quotient	Dermal	:	:	;	sure Routes
Non-Carcinogenic Hazard Quotient Young Child	Inhalation		:	:	ia and All Exp
Non-Carc	Ingestion	16+00	i	4E+00	ross All Med
	Primary	Skin	Nervous System		Total Hazard Index Across All Media and All Exposure Routes
Chemical		Arsenic	Manganese	(total)	Tot
	Exposure	ייסמיפט ויסמי			N/A
Carcinogenic Risk Young Child + Adult	Dermal				ure Routes
Carcli	Inhalation				and All Expos
	Ingestion				Total Risk Across All Media and All Exposure Routes
Chemical					Total Risk Acn
Exposure		On-Site Monitoring Well	MW-107R		
Exposure		Groundwater			
Medium		Groundwater			

7							
	1E+00	3E+00	N/A	N/A	N/A	N/A	A/A
	Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI ≈	Total Growth HI =	Total Liver HI =

TABLE J-45 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

1E+00	1E+01	N/A	N/A	N/A	N/A	N/A
Total Skin HI ≈	Total Nervous System HI ≂	Total Immune System HI =	Total Kldney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

RISK ASSESSMENT SUMMARY CENTRAL TENDENCY TABLE J-46

POWNAL TANNERY

Non-Carcinogenic Hazard Quotient Ingestion 6E+00 6E+00 Nervous System Target Organ Primary (total) Chemical Manganese Routes Total Exposure Young Child + Adult Carcinogenic Risk Total Risk Across All Media and All Exposure Routes Inhalation Dermal Ingestion Chemical On-Site Monitoring Well Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Young Child (Ages 1-6)/Adult MW-107U Exposure Point Groundwater Medium Exposure Groundwater Medium

Routes Total Exposure

Dermal

Young Child Inhalation

6E+00 6臣+00

;

;

		П			П	
A/A	6E+00	A/A	A/A	ΑΝ	N/A	A/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI ≈	Total Liver HI ≈
	-	-				

6E+00

Total Hazard Index Across All Media and All Exposure Routes

ΑN

TABLE J-47 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

Scenario Timeframe: Future	Receptor Population: Resident	Receptor Age: Young Child (Ages 1-6)/Adult

	Gre	- Ora			8	5	8] <u>-</u>
	Exposure	Youres			7E+00	2E+01	9E+00	3E+01	 	3E+01
rd Quotient	Dermal				-;	;	:	;		osure Routes
Non-Carcinogenic Hazard Quotlent Young Child	Inhalation				:	:	:	:		ia and All Exp
Non-Carc	Ingestion				7E+00	2E+01	9E+00	3E+01		ross All Med
	Primary	rarget Organ			Skin	Nervous System	NOAEL			Total Hazard Index Across All Media and All Exposure Routes
nical					-	m		(total)		Tota
Chemical					Arsenic	Manganese	Thallium		 	
	Exposure	2E-06		2E-06	6E-04			6E-04		6E-04
Carcinogenic Risk Young Child + Adult	Dermai	:		:	:			:		ure Routes
Carcii Young	Inhalation	:		:	;			:		nd All Expos
	Ingestion	2E-06		2E-06	6E-04			6E-04		ss All Media a
Chemical		Carbon tetrachloride		Heptachlor epoxide	Arsenic ·			(total)		Total Risk Across All Media and All Exposure Routes
Exposure Point		On-Site Monitoring Well	MW-109U							
Exposure		Groundwater				•				
Medium		Groundwater								

7E+00	2E+01	N/A	N/A	A/A	N/A	N/A
Total Skin HI =	Total Nervous System HI ≈	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-48 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

,								
	Exposure Routes Total		36+00	00±±6	2E+00	1E+01		1E+01
rd Quotient	Dermal		;	:		•		osure Routes
Non-Carcinogenic Hazard Quotient Young Child	Inhalation		;	:	,	;		lia and All Expo
Non-Carc	Ingestion		3€+00	9月+00	2E+00	16+01		oss All Med
	Primary Target Organ		Skin	Nervous System	NOAEL			Total Hazard Index Across All Media and All Exposure Routes
Chemical			Arsenic	Manganese	Thaillum	(total)		Tota
	Exposure Routes Total							N/A
Carcinogenic Risk Young Child + Adult	Dermal							ure Routes
Carcir Young	Inhalation							nd All Expos
	Ingestion						- 11	Total Risk Across All Media and All Exposure Routes
Chemical								Total Risk Acro
Exposure Point		On-Site Monitoring Well MW-109U						
Exposure Medium		Groundwater						
Medium		Groundwater						

3E+00	0 E +00	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI ≈	Total Growth HI =	Total Liver HI =

TABLE J-49 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

		_						 	 		
	Exposure	Routes Total		2E+00	7E+00	00+36					9E+00
rd Quotient	Dermal			:	:	:					osure Routes
Non-Carcinogenic Hazard Quotient Young Child	Inhalation			:	;	•					ia and All Expo
Non-Carc	Ingestion			2E+00	7E+00	9€+00					ross All Med
	Primary	Target Organ		Skin	Nervous System						Total Hazard Index Across All Media and All Exposure Routes
Chemical				Arsenic	Manganese	(total)					Tota
	Exposure	Routes Total									N/A
Carcinogenic Risk Young Child + Adult	Dermal										ure Routes
Carcir Young	Inhalation										ind All Expos
	Ingestion									 _	Total Risk Across All Media and All Exposure Routes
Chemical											Total Risk Acr
Exposure Point			On-Site Monitoring Well	MW-110R		-					
Exposure			Groundwater		•		-				-
Medium			Groundwater					 			

2E+00	7E+00	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	system HI =	system HI =	Total Kidney Hi =	Total Blood HI =	Total Growth HI =	Total Liver HI =
Tot	Total Nervous System HI =	Total Immune System HI =	Total	Total	Total (Tota
	Tot	Ę				

TABLE J-50 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Young Child (Ages 1-6)/Adult

Medium	Exposure	Exposure	Chemical		Carcín Young (Carcinogenic Risk Young Child + Adult		Chemical		Non-Carcir	Non-Carcinogenic Hazard Quotient Young Child	J Quotient	
				Ingestion	Inhalation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
							Routes Total		Target Organ				Routes Total
Groundwater	Groundwater	On-Site Monitoring Well											
		MW-110R											
								Manganese	Nervous System	4E+00	:	:	4E+00
						•		(total)		4E+00	:	:	4E+00
						•							=
									-				
							- 						
												•	
			•										
			Total Risk Across All	ss All Media a	Media and All Exposure Routes	Ire Routes	N/A	Tota	Total Hazard Index Across All Media and All Exposure Routes	ross All Media	a and All Expos	sure Routes	4E+00

N/A	4E+00	A/N	N/A	A/A	N/A	N/A
Total Skin HI ≂ ∏	Total Nervous System Hi =	Total Immune System HI =	Total Kidney HI =	Total Blood HI ≈	Total Growth HI =	Total Liver HI =

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TABLE J-51 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

	ēž e			
	Exposure Routes Total	0E+00	0E+00	6E+00
d Quotient	Dermal		:	sure Routes
Non-Cardinogenic Hazard Quotient Young Child	Inhalation	:	:	a and All Expo
Non-Carcii	Ingestion	6E+00	6E+00	ross Ali Medi
	Primary Target Organ	Nervous System		Total Hazard Index Across All Media and All Exposure Routes
Chemical		Manganese	((Otal)	Tota
	Exposure Routes Total	######################################		N/A
Carcinogenic Risk Young Child + Adult	Dermal		·	ure Routes
Carcir	ngestion Inhalation			and All Expos
	Ingestion		·	oss All Media
Chemical				Total Risk Across All Media and All Exposure Routes
Exposure Point		On-Site Monitoring Well MW-110U		
Exposure		Groundwater		
Medium		Groundwater		

Total Skin HI = N/A	Total Nervous System Hi = 6E+00	Total Immune System HI ≈ N/A	Total Kidney HI = N/A	Total Blood HI = N/A	Total Growth HI = N/A	Total Liver HI = N/A
	Total Nervol	Total Immur	Τ	ı <u> </u>	_7ot	-

TABLE J-52 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

	re otal		_			
	Exposure Routes Total		2 E +00	2E+00		2E+00
d Quotient	Dermal		:	:		sure Routes
Non-Carcinogenic Hazard Quotient Young Child	Inhalation		;	:		and All Expo
Non-Carcir	Ingestion		2E+00	2E+00		oss All Media
	Primary Target Organ		Nervous System			Total Hazard Index Across All Media and All Exposure Routes
Chemical			Manganese	(total)		Total
	Exposure Routes Total				·	N/A
Carcinogenic Risk Young Child + Adult	Dermal					re Routes
Carcin Young (Inhatation					nd All Exposu
	Ingestion					ss All Media a
Chemical						Total Risk Across All Media and All Exposure Routes
Exposure		On-Site Monitoring Well	MW-110U			
Exposure		Groundwater				
Medium		Groundwater				

N/A	2E+00	N/A	Α'N	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI ≈	Total Kidney Hi =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-53 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

	-	Exposure	Routes Total			3E+00	3€+00				3E+00
	d Quotient	Dermal			*	•	:				sure Routes
	Non-Carcinogenic Hazard Quotient Young Child	Inhalation				•••	:				 ia and All Expo
	Non-Carc	Ingestion				3E+00	35+00				oss All Med
		Primary	Target Organ			Nervous System					Total Hazard Index Across All Media and All Exposure Routes
	Chemical					Manganese	(total)				Tot
ľ		Exposure	Routes Total								N/A
	Carcinogenic Risk Young Child + Adult	Dermal									re Routes
	Carcin Young (Inhalation									d All Exposu
		Ingestion								•	Total Risk Across All Media and All Exposure Routes
	Chemical									,	Total Risk Acr
	Exposure Point			On-Site Manitoring Well	MW-111U						
	Exposure			Groundwater							
	Medium			Groundwater							

N/A	3E+00	N/A	N/A	A/N	N/A	N/A
Total Skin HI =	Total Nervous System HI ≂	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-54 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

Scenario Timeframe: Future	Receptor Population: Resident	Receptor Age: Young Child (Ages 1-6)/Adult	

	7		_	_				 	г
	Exposure	Routes Total	2E+01	2E+00	2E+01				2E+01
rd Quotient	Dermal		:	:	;		•		seure Routes
Non-Carcinogenic Hazard Quotient	Young Child Inhalation		,	:	:				ia and All Expo
Non-Carci	Ingestion	•	2E+01	5E+00	2E+01				ross Ail Med
	Primary	Target Organ	Skin	Nervous System					Total Hazard Index Across All Media and All Exposure Routes
Chemical				Se	(total)				Tot
์ 5	T-		Arsenic	Manganese			-· ·		
	Exposure	Routes Total	2 E -03		2E-03				2E-03
Carcinogenic Risk	Young Child + Adult		;		:				ure Routes
Carcir	inhalation		:		;				: All Media and All Exposure Routes
	Ingestion		2E-03		2E-03				ss All Media e
Chemical			Arsenic		(total)				Total Risk Across
Exposure	i i		On-Site Monitoring Well	MW-113R					
Exposure	Medium		Groundwater						
Medlum			Groundwater						

10.10	ZE+01	5E+00	N/A	N/A	A/A	N/A	N/A
F		Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-55 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Young Child (Ages 1-9)/Adult

Routes Total Exposure 1E+01 3日+00 1E+01 1E+01 Total Hazard Index Across All Media and All Exposure Routes Dermal Non-Carcinogenic Hazard Quotient Young Child Inhalation ; : Ingestion 1E+01 3月+00 1E+01 Nervous System Target Organ Primary Skin (total) Chemical Manganese Arsenic Routes Total Exposure 3E-04 3E-04 3E-04 Young Child + Adult Carcinogenic Risk Total Risk Across All Media and All Exposure Routes Dermal ; Inhalation : : Ingestion 3E-04 3E-04 (total) Chemical On-Site Monitoring Well Arsenic MW-113R Exposure Point Groundwater Exposure Medium Groundwater Medium

1E+01	3E+00	N/A	A/N	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-56 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

Scenario Timeframe: Future
Receptor Population: Resident
Receptor Age: Young Child (Ages 1-6)/Adult

1			_	_	T C					 		7/
			Exposure	Routes Total		4E+01	4E+01				_	4E+01
	rd Quotient		Dermal	_		•	;					osure Routes
	Non-Carcinogenic Hazard Quotient	Young Child	Inhalation			:	:					ia and Ail Expo
	Non-Carc		Ingestion			4E+01	4E+01					ross All Med
			Primary	Target Organ		Nervous System						Total Hazard Index Across All Media and All Exposure Routes
	Chemical					Manganese	(total)					Tot
	•		Exposure	Routes Total		-			~~~~~			N/A
	Carcinogenic Risk	Young Child + Adult	Dermal									ure Routes
	Carcir	Young	Inhalation									All Media and All Exposure Routes
			Ingestion									oss All Media a
, 4	Chemical											Total Risk Across
	Exposure	Point			On-Site Monitoring Well	MW-114U						
	Exposure	Medium			Groundwater			-				
	Medium	·	1		Groundwater							

N/A	4E+01	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

RISK ASSESSMENT SUMMARY CENTRAL TENDENCY TABLE J-57

POWNAL TANNERY

Receptor Population: Resident Receptor Age: Young Child (Ages 1-6)/Adult

Scenario Timeframe: Future

Routes Total Total Hazard Index Across All Media and All Exposure Routes Non-Carcinogenic Hazard Quotient : Young Child Inhalation ; Ingestion 2E+01 2E+01 Nervous System Target Organ Primary (total) Chemical Manganese Routes Total Exposure N/A Young Child + Adult Carcinogenic Risk Total Risk Across All Media and All Exposure Routes Dermal Inhalation Ingestion Chemical On-Site Monitoring Well Exposure MW-114U Point Groundwater Medium Exposure Groundwater Medium

Exposure

2E+01 2E+01

4				_		_	
	N/A	2E+01	N/A	N/A	N/A	N/A	N/A
•	Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

2E+01

TABLE J-58 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

Scenario Timeframe; Future	
Receptor Population: Resident	
Receptor Age: Young Child (Ages 1-6)/Adult	

3E+01	· · · · · · · · · · · · · · · · · · ·		3E+01	tal) 3E+01 Total Hazard Index Across All Media and All Exposure Routes	(total)	3E-03		· ·	3E-03	(total) 3E-03 Total Risk Across All Media and All Exposure Routes		MW-8-7	MW-B-7
1. 1.		: :	3E+01		Methylene chloride (total)	3E-03	: :	; ;		Methylene chlorid	On-Site Monitoring Well MW-B-7	ater	Groundwater Groundw
	Dermal	Inhalation	Ingestion 3E+01	Primary Target Organ Liver	Methylene chloride	Exposure Routes Total 3E-03	ă	Ĕ	Ingestion 3E-03		On-Site Monitoring Well	_	Groundwater
- 1		Young Child				-	Young Child + Adult	Young		-	Point		Medium
	ard Quotient	Non-Carcinogenic Hazard Quotient	Non-Carc		Chemical		Carcinogenic Risk	Carci		Chemical	Exposure		Exposure

A/N	Ν/A	N/A	N/A	N/A	N/A	3E+01
Total Skin HI =	Total Nervous System HI ≈	Total Immune System HI =	Total Kidney HI ≈	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-59 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

T :	<u>. II</u>		1		·	_		l
Exposure	Routes ota 6E+00		6E+00					9E+00
Dermal	:		:					sure Routes
Inhalation			:					ia and All Expo
Ingestion	9E+00		00+ 3 9					ross All Med
Primary	Liver							Total Hazard Index Across All Media and All Exposure Routes
	Methylene chloride		(total)					Tota
1	2E-04		2E-04					2E-04
Dermal	:							ure Routes
Inha	:		:					ind All Expos
Ingestion	2E-04		2E-04					ss All Media a
	Methylene chloride		(total)					Total Risk Across All Media and All Exposure Routes
	On-Site Monitoring Well	. MW-B-7						
	Groundwater							
	Groundwater					·····		
	Ingestion Inhalation Dermal Exposure Primary Ingestion Inhalation Dermal	Groundwater On-Site Monitoring Well Methylene chloride 2E-04 2E-04 Methylene chloride Companies Transmission Inhalation Dermal Exposure Primary Ingestion Inhalation Dermal Routes Total Routes Total Routes Total Companies Chloride Companies Companies Companies Chloride Chlo	Groundwater On-Site Monitoring Well Methylene chloride Care Native Control of Care Native	Groundwater On-Site Monitoring Well Methylene chloride (total) 2E-04 (total) 3E-04 (to	Groundwater On-Site Monitoring Welf (total) (total) (total) Ingestion Inhalation Dermal Exposure Primary Ingestion Inhalation Dermal Routes Total Routes Total Routes Total Routes Total Routes Total Routes Total Target Organ Target Organ Primary Ingestion Inhalation Dermal Dermal Routes Total Target Organ Target Organ	Groundwater On-Site Monitoring Well Methylene chloride ZE-04 ZE-04 Methylene chloride ZE-04 ZE-04 Methylene chloride ZE-04 ZE-04 Methylene chloride ZE-04 ZE-04	Groundwater On-Site Monitoring Well Methylene chloride Ctotal (total) 2E-04	Groundwater On-Site Monitoring Well Methylene chloride ZE-04 ZE-04 ZE-04 ZE-04 Methylene chloride Liver GE+00

N/A	ΝΆ	N/A	N/A	N/A	N/A	6E+00	
Total Skin HI =	Total Nervous System HI ≈	Total Immune System Hi =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =	

TABLE J-60 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

		1-6)/Adult
Scenario Timeframe: Future	Receptor Population: Resident	Receptor Age: Young Child (Ages 1-6)/Adult

	Τ	1		T	 	
	Exposure Routes Total	8E+00	4E+01	4E+01		4E+01
rd Quotient	Dermal		•	•		sure Routes
Non-Carcinogenic Hazard Quotient Young Child		:	:	;		ia and All Expo
Non-Carc	Ingestion	6E+00	4E+01	4E+01		ross All Med
	Primary Target Organ	Skin	Nervous System			Total Hazard Index Across All Media and All Exposure Routes
Chemical		Arsenic	Manganese	(total)	·	Tot
	Exposure Routes Total	5E-04 A	M	5E-04		5E-04
Carcinogenic Risk Young Child + Adult	Dermal	:		;	:	re Routes
Carcin Young (ngestion Inhalation Dermal	:		•	•	nd All Exposu
	Ingestion	5E-04		5E-04		ss All Media a
Chemical		Arsenic		(total)		Total Risk Across All Media and All Exposure Routes
Exposure		On-Site Monitoring Well Arsenic	MW-L-3			
Exposure		Groundwater				
Medium		Groundwater				

6E+00	4E+01	N/A	A/A	N/A	N/A	N/A	
Total Skin HI =	Total Nervous System HI ≈	Total Immune System HI =	Total Kidney HI =	Total Blood HI ≈	Total Growth HI =	Total Liver HI =	•

RISK ASSESSMENT SUMMARY CENTRAL TENDENCY TABLE J-61

POWNAL TANNERY

Scenario Timeframe: Future

		Exposure	Routes Total				
	Carcinogenic Risk Young Child + Adult	Dermal					
	Carcin Young (Ingestion Inhalation Dermal					
		Ingestion					
	Chemical						
Receptor Population: Resident Receptor Age: Young Child (Ages 1-6)/Adult	Exposure Point			On-Site Monitoring Well	MW-L-3		
Receptor Population: Resident Receptor Age: Young Child (Ag	Exposure	-		Groundwater			
·	Medium			Groundwater			

Exposure Routes Total

Ingestion

Target Organ Skin

Non-Carcinogenic Hazard Quotient Young Child Inhalation

Chemical

2E+00 2E+01 2E+01

2E+00 2E+01

Nervous System

Manganese Arsenic

(total)

Total Risk Across All Media and All Exposure Routes NIA Total Hazard Index Across All Media and All Exposure Routes ZE+01

2E+00	2E+01	N/A	N/A	A/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI ≖	Total Liver HI =

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TABLE J-62 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Young Child (Ages 1-8)/Adult

	Exposure Routes Total	i t	1E+01	1E+01	-		1E+01
ant						 	
zard Quotie	Dermal		•	:		 	posure Ro
Non-Carcinogenic Hazard Quotient Young Child	Ingestion Inhalation		;	:			la and All Ex
Non-Carc	Ingestion	, and the second	1E+01	1 E +01			ross All Med
	Primary Target Organ	d	Nervous System 1E+01				Total Hazard Index Across All Media and All Exposure Routes
Chemical			Manganese	(total)			Tota
	Exposure Routes Total						N/A
Carcinogenic Risk Young Child + Adult	Dermal						ure Routes
Carcir	Inhalation Dermal						nd Ail Expos
	Ingestion						Total Risk Across All Media and All Exposure Routes
Chemical							Total Risk Acro
Exposure Point		On-Site Monitoring Well	Nivo-r-10				
Exposure Medium		Groundwater Groundwater	•				
Medium		Groundwater			·		

N/A	1E+01	N/A	N/A	N/A	A/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-63 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Young Child (Ages 1-6)/Aduit

Medium	Exposure	Exposure	Chemical		Carcin	Carcinogenic Risk Young Child + Adult		Chemical		Non-Carcli	Non-Carcinogenic Hazard Quotient Young Child	1 Quotient	
				Ingestion	Inhalation Dermal	Dermal	Exposure Routes Total		Primary Tarnet Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Groundwater Groundwater	On-Site Monitoring Well											
		MW-L-10						Manganese	Nervous System	4E+00	:	:	4E+00
								(total)		4E+00	:	:	4 E +00
			Total Risk Across	ss All Media a	All Media and All Exposure Routes	ure Routes	N/A	Tota	Total Hazard Index Across All Media and All Exposure Routes	ross Alf Medi	a and All Expos	sure Routes	4E+00

	N/A	4E+00	N/A	N/A	N/A	N/A	N/A.	
•	Total Skin HI ≈	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =	

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REASONABLE MAXIMUM EXPOSURE RISK ASSESSMENT SUMMARY TABLE J-64

POWNAL TANNERY

Receptor Population: Resident Receptor Age: Young Child (Ages 1-8)/Adult

Medium	Exposure Medium	Exposure Point	Chemical		Carcin Young (Carcinogenic Risk Young Child + Adult	·	Chemical		Non-Carci	Non-Carcinogenic Hazard Quotlent Young Child	d Quotlent	
				Ingestion	Inhaiation	Dermal	Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
							Routes Total		Target Organ			-	Routes Total
Groundwater	Groundwater	All On-Site Monitoring	1,4-Dichlorobenzene	90-BE	:	;	3E-06						
		Wells	Carbon tetrachloride	25-06	:	:	2E-06						
			Methylene chloride	3E-03	;	;	3E-03	Methylene chloride	Liver	3E+01	;	:	3E+01
			Tetrachloroethylene	7E-05	;	;	7E-05						
						-							
			Atrazine	35-05	:	:	3E-05						,
			Pentachlorophenol	2E-06	į.	;	2E-06					-	
			Heptachlor epoxide	2E-06	;	:	2E-06						
			Dioxin TEQ	9E-06	:	:	9E-06				-		
			Arsenic	2E-03	;	:	2E-03	Arsenic	Skin	2€+01	;	;	2E+01
								Manganese	Nervous System	4E+01	:	:	4E+01
								Thallium	NOAEL	9€+00	:	:	9E+00
			(total)	4E-03	:	;	4E-03	(total)		15+02	;	-	1E+02
			Total Risk Across	ss All Media a	All Media and All Exposure Routes	re Routes	4E-03	Tot	Total Hazard Index Across All Media and All Exposure Routes	ross Ail Medi	a and All Expo	sure Routes	1E+02

2E+01	4 E +01	N/A	N/A	N/A	N/A	3E+01
Total Skin HI =	Total Nervous.System HI =	Total Immune System HI =	Total Kidney HI ≈	Total Biood HI ≈	Total Growth HI =	Total Liver HI =

TABLES.XLS 17-14 10.23.RME (2)]

TABLE J-65 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Resident Receptor Age: Young Child (Ages 1-8)/Adult

	1					The second secon		-					
3F+00	Sure Routes	a and All Expo	ross All Med	Total Hazard Index Across All Media and All Exposure Boutes	Tot	A/N	ure Routes	and All Expos	Total Risk Across All Media and All Exposure Routes	Total Risk Acn			
3E+00	;	:	3E+00		(total)								
3E+00	:	:	3€+00	Nervous System	Manganese						Wells		
											All On-Site Monitoring	Groundwater Groundwater	Groundwater
Routes Total				Target Organ		Routes Total							-
Exposure	Dermal	Inhalation	Ingestion	Primary		Exposure	Dermal	Inhalation Dermal	Ingestion				
		Young Child					Young Child + Adult	Young		,	Point	Medium	
	rd Quotient	Non-Carcinogenic Hazard Quotient	Non-Caro		Chemicaí		Carcinogenic Risk	Carcli		Chemical	Exposure	Exposure	Medium
	THE REAL PROPERTY AND ADDRESS OF THE PERSON NAMED IN												

N/A	3E+00	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

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TABLE J-66 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Commercial Worker Receptor Age: Adult

1E+01	sure Routes	a and All Expos	oss All Medi	Total Hazard Index Across All Media and All Exposure Routes	Total Ha	7E-04	re Routes	All Media and All Exposure Routes		Total Risk Across			
									·				
1E+01	:	;	1E+01		(total)	7E-04	4E-05	:	6E-04	(total)			
1 E +01	:	:	1E+01	NOAEL	Ohromium	5E-06	3E-07	;	4E-06	Arsenic			
	-					6E-04	4E-05	;	6E-04	Dioxin TEQ			
			-			2E-06	7E-07	;	1 E- 06	Pentachlorophenol			
						7E-06	2E-06	:	5E-06	Benzo(a)pyrene	Lagoon 1	Soil/Sludge	Soils
Routes Total				Target Organ		Routes Total							
Exposure	Dermal	Inhalation	Ingestion	Primary		Exposure	Dermal	Inhalation	Ingestion				
	מום כלכסופוונ	Young Child					Young Child + Adult	Young			Point	Medium	
	ard Quotient	Non-Carcinogenic Hazard Quotient	Non-Car		Chemical		Carcinogenic Risk	Carcin		Chemicai	Exposure	Exposure	Medium

N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-67 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Commercial Worker Receptor Age: Adult

	Exposure	Routes Lotal	45+00	4E+00				•		4E+00
Quotient	Dermal		:	:					_	ure Routes
Non-Carcinogenic Hazard Quotient Young Child	Inhalation		4	:						a and All Expos
Non-Carci	Ingestion		4E+00	4E+00						ross All Medi
	Primary	l arget Organ	NOAEL							Total Hazard Index Across All Media and All Exposure Routes
Chemical			Chromium	(total)						Total
	Exposure	Koutes lotal					-			N/A
Carcinogenic Risk Young Child + Adult	Dermal					•		 		re Routes
Carcin Young (Inhalation								-	Ind All Exposi
	Ingestion									ss All Media a
Chemical										Total Risk Across All Media and All Exposure Routes
Exposure		Ladbon 1								_
Exposure		Soil/Sludge	•							
Medium		Sols			 	_				

N/A	N/A	N/A	NA	N/A	N/A	N/A
Total Skin HI ≖	Total Nervous System HI =	Total Immune System HI ≈	Total Kidney HI ≈	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-68 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

	cial Worker		
Scenario Timetrame: Future	Receptor Population: Commercial Worker	Receptor Age: Adult	

00+38	Sure Routes	and All Expos	oss All Media	Total Hazard Index Across All Media and All Exposure Routes	Tota	A/N	re Routes	nd All Exposi	ss All Media ar	Total Risk Across All Media and All Exposure Routes			
				,		·							
								•					
6E+00	:	;	0 € +00		(total)								
6E+00	:	:	6E+00	NOAEL	Chromium		•						
											Lagoon 3	Soil/Sludge	Soils
Routes Total				Target Organ		Routes Total							
Exposure	Dermal	Ingestion Inhalation	Ingestion	Primary		Exposure	Dermal	Inhalation Dermal	Ingestion				
		Young Child					Young Child + Adult	Young			Point	Medium	
	d Quotient	Non-Carcinogenic Hazard Quotlent	Non-Carcin		Chemical		Carcinogenic Risk	Carcin		Chemical	Exposure	Exposure	Medium

Α/N	N/A	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System Hi =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

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TABLE J-69 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Commercial Worker Receptor Age: Aduit

3E+00	osure Routes	ia and All Expo	ross All Med	Total Hazard Index Across All Media and All Exposure Routes	Tot	N/A	ure Routes	ind All Expos	oss All Media a	Total Risk Across All Media and All Exposure Routes			
					-								
3E+00	!	;	3E+00	•	(total)						-		
3E+00	;	:	3E+00	NOAEL	Chromium			•••					
											Lagoon 5	Soil/Sludge	Soils
Routes Total				Target Organ		Routes Total							
Exposure	Dermal	Inhalation	Ingestion	Primary		Exposure	Dermal	Inhalation Dermal	Ingestion				
		Young Child					Young Child + Adult	Young			Point	Medium	
	d Quotient	Non-Carcinogenic Hazard Quotient	Non-Carci		Chemical		Carcinogenic Risk	Carcir		Chemical	Exposure	Exposure	Medium

A/A	N/A	N/A	ΝΆ	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI =	Total Growth HI =	Total Liver HI =

TABLE J-70 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Utility Worker Receptor Age: Adult

			7	- -		 1
		Exposure Routes Total	5E+00		2E+00	 5E+00
	rd Quotlent	Dermal	:		:	osure Routes
	Non-Carcinogenic Hazard Quotient Young Child	Ingestion Inhaiation	:		:	lia and All Exp
	Non-Carc	Ingestion	5E+00		2E+00	 ross All Med
		Primary Target Organ	NOAEL			Total Hazard Index Across All Media and All Exposure Routes
	Chemical		Chromium		(total)	Tota
		Exposure Routes Total				N/A
	Carclnogenic Risk Young Child + Adult	Dermal				ure Routes
	Carcle Young	Inhalation				All Media and All Exposure Routes
		Ingestion				oss All Media a
	Chemical	:				Total Risk Across
	Exposure		Lagoon 1	-		
	Exposure		Soil/Sludge			
	Medium		Soils			
4				_		

9E+00	N/A	N/A	N/A	N/A	N/A	A/A	A/N
Across All Media and All Exposure Koutes	Total Skin HI ≈	Total Nervous System HI =	Total immune System ⊞ =	Total Kidney HI =	Total Blood HI ≈	Total Growth HI =	Total Liver HI

A/A

Total Kidney HI =

Total Growth HI = Total Liver HI =

A S S

Total Skin HI =

Total Nervous System HI = Total Immune System HI =

TABLE J-71 RISK ASSESSMENT SUMMARY CENTRAL TENDENCY

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Utility Worker Receptor Age: Adult

İ															
o	2E+00	osure Routes	ia and All Expo	ross All Medi	Total Hazard Index Across All Media and All Exposure Routes	Tota		N/A	ure Routes	and All Exposi	oss All Media a	Total Risk Across All Media and All Exposure Routes			
															-
<u> </u>	2E+00	;	;	26+00		(total)								•	
0	2 E +00	;	:	2E+00	NOAEL		Chromium			_			Lagoon 1	Soil/Sludge	Soils
Total	Routes Total				Target Organ			Routes Total							
J.e	Exposure	Dermal	Inhalation	Ingestion	Primary			Exposure	Dermal	Inhalation	Ingestion				
			Young Child						Young Child + Adult	Young			Point	Medium	
		rd Quotient	Non-Carcinogenic Hazard Quotient	Non-Carci		icat	Chemical		Carcinogenic Risk	Carcin		Chemical	Exposure	Exposure	Medium

TABLE J-72 RISK ASSESSMENT SUMMARY REASONABLE MAXIMUM EXPOSURE

POWNAL TANNERY

Scenario Timeframe: Future Receptor Population: Utility Worker Receptor Age: Adult

Otal Chromium (tc	Medium	Exposure	Exposure Point	Chemical		Carcin	Carcinogenic Risk Young Child + Adult		Chemical		Non-Carcl	Non-Carcinogenic Hazard Quotient Young Child	d Quotient	
Soil/Sludge Lagoon 3 Chromium (tr					Ingestion	Inhalation		Exposure		Primary	Ingestion	Inhalation	Dermal	Exposure
Soil/Sludge Lagoon 3 Chromium Tread Disk Action All Media and All Economic Disks Action All Media and Al								Routes Total		Target Organ				Routes Total
) (1)	Soils	Soil/Sludge	Lagoon 3						Chromium	NOAFI	311+00	:	:	3F+00
ਸੁੱ ਮ											33			3
VIII									(total)		94 100 100 100 100 100 100 100 100 100 10	:	:	36+00
VIX	,											·		
VIV														
VIV.													·	
VIV.														
VIV	-							. ,				_		
× 1											_			
				Total Risk Acro	ss All Media a	ind All Exposi	ure Routes	N/A	Tota	Total Hazard Index Across All Media and All Exposure Routes	ross All Medi.	a and All Expo	sure Routes	3E+00

N/A	A/A	N/A	N/A	N/A	N/A	N/A
Total Skin HI =	Total Nervous System HI =	Total Immune System HI =	Total Kidney HI =	Total Blood HI ==	Total Growth HI =	Total Liver HI =